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MARTIN JACOBY, F.E.S.  
J. H. LEECH, B.A., F.L.S., F.E.S.

DR. D. SHARP, F.R.S., F.E.S., &c.  
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Great deeds are done and great discoveries made."

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“ Sometimes I let a sunbeam slip  
To light her shaded eye ;  
A second fluttered round her lip  
Like a golden butterfly.”

TENNYSON.

“ Through the sunny summer sky,  
Came a sailing butterfly.  
\* Dancing through the sweet sunshine,  
Glad with clover's ruddy wine !

Stopping just to gaily sip  
The wild pansy's purple lip,  
Or to softly swing and rest  
On an apple-blossom's breast,

Or to steal the fluffy gold  
That the buttercups do hold,  
Or to watch the blossoming grass  
Ripple, when the light winds pass !

But still sailing on and on,  
Till she found the sunshine gone ;  
Frightened then by fading light,  
And the softly gathering night,

She would chase the flying day,  
So she stops to ask the way—  
Lights upon a swinging nest :  
' Right or left ? which way is West ? '

And a young bird answers low,—  
' On towards the summer's glow ! '  
\* So she fluttered from the nest, \*  
Seeking still the yellow West ! ”

MARGARET DELAND.

“ A flight of yellow butterflies,  
In slow and airy quiver,  
Winged downwards.”

HARRIET ELEANOR KING.

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# THE ENTOMOLOGIST.

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## CHANGE OF PROPRIETORSHIP.

I HAVE very great pleasure in announcing that I have acquired proprietorship of the 'Entomologist.'

Under the liberal management of the late proprietor, Mr. J. H. Leech, this Journal has made a considerable advance, not only as regards the improved quantity and quality of the literary matter, but in its circulation, which at the present time is a very extensive one. I need hardly say that I shall endeavour to maintain this improvement, and I venture to ask readers and contributors to kindly support me in keeping up the present popularity of the 'Entomologist.'

RICHARD SOUTH.

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## VARIETY OF *ARCTIA CAIA*.



VARIETY OF *ARCTIA CAIA*.

THE above rather striking variety of *Arctia caia*, a female, came out in my breeding-cage on the 20th July last. The fore wings are entirely brown, with the exception of a white comma-shaped mark half-way between the costal margin and the anal angle, that on the left wing being rather smaller, with the tail portion of the comma separated from the upper portion. On the right wing there is an additional very minute white spot between



the comma-shaped mark and the hind margin ; this spot is absent from the left wing. There is also a small oval white spot at the base of both wings adjoining the thorax. A network of rather a darker shade of brown, only visible in a strong light, stretches over both wings. The hind wings do not present any striking variation from the type, but the right wing is a little crumpled. The left side of the thorax is creamy, the remaining and larger portion brown. It is rather a small specimen, being only  $2\frac{1}{8}$  inches in expanse. The larva was collected in a small state, with about sixty others, from various localities, and fed on dead nettle and virginian creeper.

R. LADDIMAN.

25, Hellesdon Road, Norwich, Nov. 5, 1891.

[A similar variety of *Arctia (Chelonia) villica* is figured, Entom. xi. p. 73 (1878).—ED.]

## MR. BUTLER'S NOTES ON SYNONYMY OF NORTH AMERICAN NOCTUIDÆ.

BY JOHN B. SMITH, Sc.D.

IN the 'Entomologist' for October, 1891 (vol. xxiv. p. 238), Mr. Butler has some remarks on the synonymy of certain species of *Agrotis*, and incidentally on my criticism of his previous paper. Since I wrote, and since Mr. Butler wrote, I have had the pleasure of making Mr. Butler's personal acquaintance, and also of spending two weeks in studying the magnificent collections in the South Kensington Museum. I have, therefore, seen the very specimens spoken of by Mr. Butler, and have had the advantage of a previous thorough acquaintance with long series of the various forms considered identical by him.

A regrettable attack of illness confined Mr. Butler to his home during most part of the time spent in the museum, and prevented my demonstrating to him the distinctness of the species he united.

Mr. Butler unites in one series:—*Mythimna subporphyrea*, Wlk., = *Agrotis phyllophora*, Zet., = *A. alternata*, Zet., = *varix*, Zet., = *variata*, Zet.

As a matter of fact, all these are good and valid, save that *varix* and *variata* are forms of one species. My identification of all these forms, save *subporphyrea*, which I had not known, was accurate; and I am willing to stand by every word contained in my monograph of *Agrotis*.

Mr. Butler also referred *Agrotis turris*, Zet., to *Peridroma saucia*, Hbn.; and my criticism of this reference is also just. Mr. Butler did not know the range of variation in *turris*, therefore he associated one specimen with *saucia*, while other specimens of the same species stand under two other names, their identity not

recognized. Mr. Butler uses very largely, as a basis of classification, antennal structures, and usually ignores frontal modifications, armature of tibiæ, and clothing of eyes. I have no present quarrel with his system, though I believe it is radically and completely wrong; but if he had examined the front of *turris*, he would have found it structurally different from that of *saucia*, and would not have made the reference. Had he seen a male, he would have recognized its distinctness by the difference in antennal structure.

Mr. Butler's notes are unquestionably of value, and in the majority of instances his synonymy is correct; but where a student of a local fauna finds references which he *knows* cannot be accurate, it makes it simply impossible for him to accept any of the references implicitly or unquestioned. I must re-affirm my position that synonymical references should only be made after critical study and comparison, and less damage and confusion result from having the same species under two names than from having two species erroneously combined. In the latter case, one who relies on the correctness of the synonymy is apt to re-describe old species, and thus to confuse matters still more. I hold, also, that critical remarks should be based either on a thorough knowledge of the fauna to which the insect belongs, or on a monographic study.

Mr. Butler is correct, of course, when he calls attention to the fact that he has the Noctuidæ of the world under his charge; but that is not a reason, surely, why he should be privileged to make synonymical references without sufficient study.

The British Museum Catalogues, by Walker, have been stumbling-blocks in the way of American Entomology since their publication, and many species of Lepidoptera described therein are unknown to us to-day. Some of the groups have been satisfactorily and well straightened out by subsequent British workers, and it is surely not too much to ask that the Museum workers of the present day should not still further confuse matters by hasty notes based on insufficient study. The result would be simply that the latter notes would be considered as unreliable as the first, and the synonymy would be just as unsatisfactory as before. Nor would the reputation of the British Museum and of its workers be enhanced by such papers.

My notes on the American species in the British Museum collections will be ready for publication, I hope, before the end of the year. I have nothing but words of gratitude for the reception accorded me there. Every facility was afforded me; all kindness was shown.

For Mr. Butler personally, and for his works in general, I have the highest regard, and naturally therefore no personal motive for my criticism of his notes.



## THE ENTOMOLOGICAL CLUB OF LONDON.

BY RICHARD SOUTH.

ALTHOUGH it is the oldest association of entomologists extant, the Entomological Club of London does not appear to be as widely known as it certainly deserves to be. Before, however, we consider the origin, progress, and present state of this Club, we will briefly review the history of kindred institutions in this country.

Not only does England hold the honourable position of being the first country in Europe to establish a purely Entomological Society, but, as a matter of fact, no less than five of such societies were founded in London between 1745 and 1831, all of which preceded any continental society devoted to Entomology.

I understand that attempts were made on one or two occasions during the latter half of the eighteenth century to start an entomological association, but with what measure of success I am unable to say. I have endeavoured to ascertain something definite about these reputed societies, but I can find no circumstantial account of them, and must therefore pass on to those about which something is known.

The "*Societas Aureliana*" started into life in 1745; but very little is known to us of this society beyond the fact that it did exist, and that a disastrous fire destroyed its library and collections, and also put an end to its career in the year 1748.

In 1806 the "*Societas Entomologica*" was founded in London, and seems to have been the earliest entomological society that published its '*Transactions*,' the first volume of which was edited by Haworth, and was completed between the years 1807 and 1812. This society was broken up in 1813, and London had to wait until 1826 for the re-establishment of a centre around which her entomologists might gather. In the year last mentioned the "Entomological Club" was formed for the purpose of holding social meetings at the residence of each of its members in turn. Although the membership was limited to eight, the Club seems to have enjoyed an exceedingly good time, for we find that in 1836 the property of the association, in the shape of insects, cabinets, books, &c., was of such considerable value that it was deemed advisable to frame a Constitution, and adopt a Code of Laws. It is perhaps worthy of remark that for ten years this little band of entomologists had conducted the affairs of the Club solely by certain understood, but for the most part unwritten, regulations mutually agreed on between themselves.

The "Entomological Society of London" was inaugurated at the '*Thatched House*,' St. James's Street, on the 22nd of May, 1834, when the following officers were appointed:—Honorary

President, R. W. Kirby; President, J. G. Children; Vice-Presidents, N. A. Vigors, J. F. Stephens, Dr. Horsfield; Treasurer, Rev. F. W. Hope; Secretary, G. R. Gray; Curator of Coll. and Libr., G. R. Waterhouse. The first sitting for the transaction of ordinary business was held at the Society's Rooms, 17, Old Bond Street, November, 1835. The prosperity of this long-established Society seems assured, as it is well and favourably known both at home and abroad. Its rooms are now at Chandos Street, Cavendish Square. *En passant*, it may be mentioned that the French Entomological Society was established in 1832, "Entomologischen Vereins zu Stettin" in 1840, and "Société Entomologique Belge" in 1857.

There are now local Natural History Societies scattered throughout the length and breadth of the British Islands, and, as Entomology holds a leading position in most of these, the collectors residing in most of our large towns have facilities for the interchange of ideas and experiences. In London this is especially the case, and one of the metropolitan locals, *viz.*, the South London Entomological and Natural History Society, established in 1872, has earned for itself a large measure of popularity; and its annual exhibitions have, without doubt, done much towards developing a taste for Entomology in many who had perhaps simply been attracted by curiosity to look at whatever this Society had to show them.

Returning to the history of the Entomological Club, we find that at a meeting held at Mr. Bennett's, 48, Cannon Street, on Tuesday evening, June 9th, 1836, a committee, previously appointed for the purpose, brought in a Preamble and Code of Laws, which, after sundry alterations had been suggested, adopted, and incorporated, were unanimously agreed to. Immediately after the re-construction of the Club, donations began to pour in at a great rate; several entomologists gave their entire collections, both British and exotic. Among many other presents to the Club in 1836 were the following:—Mr. Davis, the whole of his exotic insects and numerous rare British ones; Mr. William Christy, Jun., of London, the whole of his collection of British and exotic insects, with the exception of the British Lepidoptera,\* and several books; Mr. J. F. Christy, a handsome mahogany cabinet of 40 drawers, together with his whole collection of insects; Mr. Bennett, a splendid collection of Brazilian insects of all orders, comprising nearly 1000 specimens, purchased by him expressly for the Club; Mr. Henry Doubleday, 250 specimens of British Lepidoptera collected in his district expressly for the Club.

So far as we can trace them, donations to the Club seem to have been on a liberal scale up to the end of 1837; after that date there is a hiatus, owing to the loss of a minute-book. In

\* These also were given to the Club on a subsequent occasion.



1852, however, we find Mr. Doubleday, Mr. Stevens, and Mr. Wallcott, among others, doing much to enrich the collections. On Dec. 22nd, 1855, it was announced that a large number of British insects had been presented to the Club since May, and at the April meeting, 1856, Mr. E. Newman, as Curator, reported the collection in a good state of preservation, and that numerous additions had been made thereto both by captures and donations. The Curator's report, at the end of the year 1856, shows that there were large donations of insects, and that all duplicates sent in for distribution were offered unconditionally to be selected from by every visitor to the collection. One gentleman, Mr. Edleston, had sent over 500 specimens for distribution in this way. At almost every meeting from 1856 to 1859 donations were announced. Very few presents appear on the minutes after 1868, but in 1876 we find that Mr. W. Machin gave the Club a box of Lepidoptera.

Although the Club has long borne a name, it does not appear ever to have had a local habitation. Its collection of insects and its library are deposited in the house of one or other of its members who happens to hold the office of Curator. At a meeting of the Club, held on the 16th October, 1852, at Mr. Bowerbank's, a letter from Mr. Walker, the then Curator, was read, in which he tendered his resignation of the curatorship, as he was about to remove from London, and requesting that the collection of the Club be removed from his residence in Bedford Square. This announcement gave rise to considerable discussion, and there seems to have been some little difficulty in fixing on a new location for the cabinets, &c. However, the matter was referred to Mr. Bowerbank and Mr. Newman to consider and report on at a future meeting, and on the 18th of December, 1852, it was decided that the entomological property of the Club be entrusted to Mr. Newman, who had, to oblige Mr. Walker, already removed the cabinets to his own residence. It was further resolved that the said collection should be open to entomologists generally one evening in each week, as had formerly been the custom when under the charge of Mr. Stephens and Mr. Curtis respectively. At this meeting Messrs. S. Stevens, T. Ingall, and E. Newman were appointed a committee to examine and report on the collections of the Club, and on the 15th of January, 1853, the following report was presented at a meeting held at Mr. Marshall's residence in the Bank of England :—

“Your Committee have carefully examined the collection of British insects belonging to the Entomological Club, and find it to be contained in three mahogany cabinets, one of which has 19 drawers, and a vacancy for a 20th, and the others 40 drawers each, making a total of 99 drawers. The glass of one drawer is broken, and we recommend its being mended forthwith. The insects generally are free from dust, mould, or mites.

“There appears to be no general system of arrangement, and the whole of the parasitic Hymenoptera, a large portion of the Diptera, *viz.*, the Muscidae, the whole of the Hemiptera, and a drawer containing a rich and almost perfect series of a large portion of the Curculionidae, which had been examined and named by Mr. Walton, are altogether missing; on referring to the minutes of the Club it appears that the drawer in question was missing when Mr. Walker received the cabinets, and that the Hemiptera have been lent to Mr. Dallas for description in his forthcoming volume of the ‘Insecta Britannica.’

“We are unitedly of opinion that the collection in its present confused state of arrangement and impoverished condition cannot be usefully thrown open as a collection for reference, but we trust that by degrees portions of the missing property will be returned by those to whom it has been lent, and that entomologists generally, seeing the utility of public collections, will assist with contributions in endeavouring to restore this to its pristine state; and we are clearly and very decidedly of the opinion that in future no insect whatever should be removed from the cabinets without the express sanction of the Club, or of a committee acting on its behalf, and we consider it indispensable that the borrower should in every instance sign an acknowledgment of the loan.”

It will be noticed that no mention is made in this report of exotic insects so liberally presented to the Club in its earlier days; perhaps the lost minute-book would inform us about these.

After the death of Mr. Newman, which event occurred in June, 1876, three members of the Club, *viz.*, Messrs. Power, Lowne, and Grut, met at the residence of Dr. Power to appoint a new Curator, and, at a meeting held at Dr. Power's on the 25th July, 1876, it was agreed that the kind offer of Mr. Lowne to take charge of the collection be accepted; and the chairman, at a subsequent meeting, announced that the collection had been removed to Mr. Lowne's residence, 49, Colville Gardens, Bayswater,\* and arrangements had been made that he would act as Curator. Mr. Lowne stated at this meeting that he proposed to have the collection in readiness, and to receive visitors who might wish to see it, on the first Monday in each month. The cost of removing the cabinets and other incidental expenses amounted on this occasion to a sum of £4 15s., and to defray this a whip was agreed to, which resulted in the collection of £10.

The foregoing is a good illustration of the way in which the expenses of the Club are met. As members do not pay entrance fee or subscription, the Club has no funds resulting from this

\* In 1878 Mr. Lowne removed to 65, Cambridge Gardens, Notting Hill, W., his present residence, and was authorised to take the collection with him.



very usual source of income ; so when the Treasurer finds himself in need of the wherewith to satisfy any claim against the Club, he simply brings the matter forward at a meeting, and a whip, say, of 2s. 6d., or something about that sum, according to the amount required, is suggested and cheerfully agreed to.

Turning to the membership of the Club, we find that at the present moment it has fallen to about half its proper strength. According to the original Laws of the Club the number of members was fixed at eight, but in January, 1865, the number was raised to nine. On the 17th of November, 1869, Law 3 was altered, and now reads as follows :—"That any vacancy occurring in the Club be filled up by election from the Honorary Corresponding Members resident in or near London." This alteration seems to have been necessary, because there was a difficulty in keeping the roll full when it was a *sine qua non* that ordinary members should have a residence in London. Strange as it may seem that nine entomologists resident within the metropolitan area could not be found to keep together this venerable institution, the fact remains that if Law 3 had been adhered to the Club would this day have had only three ordinary members, to wit, Mr. S. Stevens, Mr. Lowne, and Dr. Thudichum. The concession to Honorary Members *resident in or near London* has been wisely extended to Honorary Members who live at some distance from town, but who can make it convenient to visit London occasionally, and this has resulted in the election of Mr. Verrall and Dr. Mason as ordinary members.

The particular feature of this association of entomologists which distinguishes it from other entomological societies is the social character of its meetings. The members meet at the residence of one of their number, and the member in whose house the meeting takes place is chairman of the evening, and he is also host. In the latter capacity it is incumbent on him to provide a supper for the party, and this, according to the taste of the entertainer, may be one of the champagne kind, or a frugal meal of bread and cheese and glass of homely beer. In addition to the ordinary members, the chairman of the evening enjoys the privilege of inviting any number of honorary members.

Possibly it is not always in convenient accord with a member's domestic arrangements to entertain a party of entomologists at particular periods, or even at any time, and maybe this in a measure explains why it is that the full membership of the Club is not always maintained. Probably some alteration in the Law which bears upon this matter might be an advantage to the Club.

Many entomologists, especially those of the London contingent, are now familiar with a certain phase of the business of the Entomological Club. Mr. Verrall's supper at the Holborn Restaurant has come to be regarded as an annual event; the

réunion is an exceedingly pleasant one, and is quite unique in the way of an entomological gathering on social lines.

For several years past the formal discussion of entomological questions has ceased to find a place in the business of the Club meetings, but conversation is unrestricted, and naturally turns upon entomological matters. It would probably be injudicious for the members to endeavour to re-establish a custom which obtained under a former régime; I refer to the bringing forward at one meeting certain knotty questions to be discussed at the next meeting, as, for example, the set of three proposed by Messrs. Spence and Newman in January, 1852:—1. "What are the economy and natural affinities of the genus *Boreus*?" 2. "Can the species of the genus *Pieris* be distinguished from each other by the scales?" 3. "Is it desirable to adopt a mononymic nomenclature in Natural History as proposed by Mons. Amyot?" This kind of thing may well be left to societies of the profound class to deal with.

As has already been mentioned, the Entomological Club has a large collection of British insects, among which are probably many types, as certain families of different Orders have been borrowed by specialists at various times for descriptive work (Mr. McLachlan, for instance, had a loan of the *Perlidæ* in 1869). We have seen that in the past this collection was open to entomologists for the purpose of assisting them in naming their captures, &c., and this is, I believe, still the case, but the fact is not generally known. A private house, however, does not appear to be the best possible location for a reference collection of this kind. Apart from the question of responsibility, its custody entails upon the gentleman in charge certain obligations in the way of receiving visitors, &c., which it may not always be convenient to discharge. Again, many who would be glad to examine such a collection are deterred from making use of it because they fear to tax the courtesy of the Curator.

Now that the Club is again exhibiting signs of activity, and there is evidence of intention to bring up the membership to its normal strength, it would seem to be a convenient time to give this matter of housing the collection serious consideration. Perhaps it might be found practicable to deposit the cabinets, as a loan, with one of the London Entomological Societies having rooms of their own. If this course were adopted the collection would be open to every one desiring to see it at stated periods, which, of course, would be the dates and hour of meeting of the particular Society entrusted with the cabinets.

Before concluding this brief account of the Entomological Club, I should mention that the 'Entomological Magazine,' the first periodical devoted to Entomology published in Britain, was an outcome of the Club. The first number of this interesting journal appeared in September, 1832, and the last, completing the fifth volume, in October, 1838.



## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &amp;c.

(Continued from vol. xxiv. p. 295.)

## ORTHOSIIDÆ.

LEUCOCOSMIA, *Butl.**Leucocosmia ceres*.*Leucocosmia ceres*, Butler, Trans. Ent. Soc. 1886, p. 394, n. 21, pl. ix. fig. 10.*Caradrina euthusa*, Hampson, Ill. Typ. Lep. Het. viii. p. 79, pl. cxlv. fig. 1.

Fidji and Nilgiris. Coll. B. M.

Mr. Hampson quite agrees with me that the moths from these widely sundered localities are specimens of one and the same species.

ORTHOSIA, *Ochs.**Orthosia reciproca*.*Apamea reciproca*, Walker, Lep. Het. Suppl. 2, p. 672 (1865).*Orthosia breviscula*, Walker, l. c., 3, p. 716 (1865).

Moreton Bay. Coll. B. M.

DASYGASTER, *Guen.**Dasygaster hollandiæ*.*Dasygaster hollandiæ*, Guenée, Noct. i. p. 201, n. 319 (1852).Var. *D. leucanioides*, Guenée, l. c., 1, p. 202, n. 320 (1852).*Graphiphora? facilis*, Walker, Lep. Het. xi. p. 745 (1857).

Australia, Tasmania. Coll. B. M.

*Dasygaster epundoides*.*Dasygaster epundoides*, Guenée, Noct. i. p. 202, n. 321 (1852).*D. punctivena*, Walker, Lep. Het. ix. p. 242, n. 4 (1856).

Tasmania. Coll. B. M.

*Graphiphora? quadrata* of Walker appears also to be a *Dasygaster*, but it is in such wretched condition that its natural position cannot be settled with certainty.

DYSCHORISTA, *Led.**Dyschorista prodeuns*.*Cerastis? prodeuns*, Walker, Lep. Het. x. p. 452, n. 11 (1856).*Teniocampa puerilis*, Grote (see Check List, p. 31, n. 670).

United States. Coll. B. M.

Grote's specimens are labelled, *Mamestra* and *Graphiphora puerilis*, but the species agrees more nearly with *Dyschorista* than with any of the genera to which it has hitherto been referred, and I therefore provisionally place it therein.

The genus *Pteratholix* is identical with *Berresa*, Walk. (Cat. Lep. Het. xvi. p. 214, 1858), and is allied to *Ilattia*.

PERIGEA, Guen.

*Perigea conducta*.

*Caradrina consocia*, Walker, Lep. Het. x. p. 299, n. 40 (1856).

*Hab.* — ? Coll. B. M.

This is another synonym of this much described species.

The following genera belong to the later group, in which the radial vein of the secondaries is emitted near to or from the same point as the third medial branch.

Grote says (Check List, p. 37), in explanation of his use of the term *Eustrotia* in place of *Erastria*, "I cannot use *Erastria* for this genus, because Hübner uses that term before Treitschke for a genus of Geometridæ. If used only in the 'Tentamen,' the publication of which by Hübner is improbable, I should ignore it. In the 'Verzeichniss' the term is only used in the plural (p. 299) to indicate a Stirps; moreover, I believe that Treitschke has priority over this use of the name."

ERASTRIIDÆ.

NIPISTA, Walk.

*Nipista tigris*.

*Diastema tigris*, Guenée, Noct. ii. p. 1127.

*Nipista lineata*, Walker, Cat. Lep. Het. xii. p. 800, n. 1 (1857).

Venezuela and Sta. Martha. Coll. B. M.

This has little in common with *Diastema virgo*; it is, in fact, much nearer to the *Leptosia concinnimacula* of Guenée, which I would suggest should be, for the present at any rate, associated with it, as it has not the palpi of the European insects placed with it by its describer, nor can I see my way clear to admitting it into *Erastria*.

COSMOPHILIDÆ.

GONITIS, Guen.

*Gonitis editrix*.

*Gonitis editrix*, Guenée, Noct. ii. p. 404, pl. 11, fig. 5.

*G. fractifera*, Walker, Lep. Het. xiii. p. 998, n. 2 (1857).

*G. cosmioides*, Walker, l. c., p. 1000, n. 5 (1857).

South America, West Indies. Coll. B. M.

*Gonitis sabulifera*.

*Gonitis sabulifera*, Guenée, Noct. ii. p. 404, n. 1272.

Var. *G. involuta*, Walker, Lep. Het. xiii. p. 1003, n. 12 (1857).

*G. basalis*, Walker, l. c., p. 1004, n. 13 (1857).

*Tiridata colligata*, Walker, l. c., Suppl. 3, p. 870 (1865).

*Gonitis propinqua*, Butler, Proc. Zool. Soc. 1884, p. 497.



Southern Asia and Africa. Coll. B. M.

Mr. Hampson obtained typical *G. sabulifera* in the Nilghiris; and Mr. Hocking caught one damaged specimen at Dharmasala.

*Gonitis fulvida.*

♂ ♀ *Anomis fulvida*, Guenée, Noct. 2, p. 97, n. 1259 (1852).

♀ *Gonitis combinans*, Walker, Lep. Het. xiii. p. 1001, n. 7 (1857).

♂ *G. inducens*, Walker, l. c., p. 1004, n. 14 (1857).

♀ *G. privata*, Walker, l. c., Suppl. 3, p. 863 (1865).

*G. commoda*, Butler, Ill. Typ. Lep. Het. ii. p. 36, pl. xxxii. f. 3 (1878).

Var. ♂ *G. metaxantha*, Walker, l. c., xiii. p. 1005, n. 15 (1857).

Var. ♀ *G. albitibia*, Walker, l. c., p. 1001, n. 8 (1857).

♂ *Rusicada nigratarsus*, Walker, l. c., p. 1006, n. 1 (1857).

♂ *Deremma simulatrix*, Walker, l. c., Suppl. 3, p. 864 (1865).

Java, Ceylon, India, China, Japan, Solomon Islands, Sierra Leone. Type, Coll. B. M.

Guenée made a mistake as to the locality of his type, which was in the Horsfield collection (E. I. Co.), from Java. I have placed the variety *G. metaxantha* in front of *G. albitibia*, as it is an intermediate form linking the rufous to the fuliginous type. *G. revocans* is an Australian representative of *G. fulvida*, of a larger and heavier build; and *G. xanthochroa* is a Fijian representative, larger, and with comparatively longer primaries, but not otherwise differing.

*SCÆDISA*, Walk.

*Scædisa exaggerata.*

*Anomis exaggerata*, Guenée, Noct. ii. p. 398, n. 1261 (1852).

*Scædisa designans*, Walker, Lep. Het. xiii. p. 1007, n. 1 (1857).

Theresopolis. Coll. B. M.

The type of the species was from New Freiburg.

*ANOMIS*, Hübn.

This genus would have had to be restricted to its type, *A. exacta*, if *A. luridula* were certainly an *Aletia*. It is, perhaps, only a form of *A. derogata*, a type standing between *A. xyliina* and *A. argillacea*; we have two examples of it from the States. *A. erosa* is a *Cosmophila*, and only differs from *C. xanthimdyma* in its ciliated, instead of serrated, antennæ; pattern, colouring, sexual differences of colour included, are all absolutely the same.

The type of *Aletia* is a *Leucaniid*.

*Anomis luridula.*

*Anomis luridula*, Guenée, Noct. ii. p. 401, n. 1268 (1852).

United States. Coll. B. M.

I have no doubt that this is a slight variety of Walker's *A. derogata*, described from St. Domingo and Venezuela, but also common in the States; one of our examples of *A. luridula* answers well to Guenée's description of his *A. impasta*, which, however, was described from Cayenne. The question, therefore, arises whether *A. derogata* and *A. luridula* should not both be regarded as varieties of *A. impasta*; yet the latter may prove distinct when a Cayenne specimen is compared with *A. derogata*. It seems nonsense to call the typical form a variety of *A. luridula*, therefore the better way would be simply to quote Walker's *A. derogata* as a synonym.

*Anomis xyliua*, Say.

*Anomis grandipuncta*, Guenée, Noct. ii. p. 400, n. 1266 (1852).

*Aletia argillacea*, Grote (see Check List, p. 33, n. 812) (1882).

North and South America. Coll. B. M.

I cannot admit this identification of *A. argillacea*. Hübner's figure neither corresponds in outline nor in markings with *A. grandipuncta*, which is the species labelled as *A. argillacea* by Grote. Nevertheless, Hübner's figure is not good.

*Anomis argillacea*.

*Aletia argillacea*, Hübner, Samml. Exot. Schmett. Zeitr. figs. 399, 400.

*Anomis illita*, Guenée, Noct. ii. p. 400, n. 1265 (1852).

*A. conducta*, Walker, Lep. Het. xiii. p. 990, n. 6 (1857).

Pará, Venezuela, and St. Domingo. Coll. B. M.

Prof. Riley gave us a series of *Anomides* some years ago, amongst which was an example from the United States, of what I take to be only a slightly more dusky form of this species, = *A. hostia*, Harvey.

ACONTIIDÆ.

ACONTIA, Ochs.

*Acontia malvæ*.

*Noctua malvæ*, Esper, Schmett. iv. pl. cxcv. fig. 4.

♀ *Xanthodes stramen*, Guenée, Noct. ii. p. 210, n. 976 (1852).

♂ *Xanthia imparata*, Walker, Lep. Het. x. p. 467, n. 19 (1856).

♂ *Xanthodes inefficiens*, Walker, Lep. Het. xv. p. 1752 (1858).

♀ *X. impellens*, Walker, l. c.

Europe and Asia. Coll. B. M.

*Noctua flava* of Fabricius can hardly belong to this genus. The description, "Parva in hoc genere, tota flavescens alis anticis strigis plurimis, undatis ferrugineis," will not at all do for the *Xanthodes transversa* of Guenée, which is not small, and only has three angular lines across the primaries.



*Acontia transversa.*

*Xanthodes transversa*, Guenée, Noct. ii. p. 211, n. 978 (1852).

*X. intersepta*, Walker (not Guenée), Lep. Het. xii. p. 778, n. 5 (1857).

*X. migrator*, Walker, l. c., p. 779, n. 6 (1857).

Asia and Australasia. Type in Coll. B. M.

Walker carelessly transposed the two species, *A. transversa* and *A. intersepta* in his Catalogue. Had he examined the type specimens he might easily have discovered this blunder.

*Acontia graellsii.*

*Acontia graellsii*, Feisthamel, Ann. Soc. Ent. France, vi. p. 300, pl. 12, fig. 3 (1837).

♂ *Xanthodes innocens*, Walker, Lep. Het. xv. p. 1752 (1858).

♂ ♀ *X. fimbriata*, Walker, l. c., Suppl. 3, p. 777 (1865).

Europe, Asia, and Africa. Coll. B. M.

*Acontia amata.*

*Xanthodes amata*, Walker, Lep. Het. Suppl. 3, p. 778 (1865).

*X. adunca*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 39.

Australia. Coll. B. M.

## TARACHE, Hübn.

Mr. Moore has pointed out that *T. solaris* = *lucida*, Hufn., is the type of this genus.

*Tarache lucida.*

*Noctua lucida*, Hufnagel, Berl. Mon. iii. p. 302, n. 424 (1767).

*N. solaris*, Schiffermüller, Wein. Verz. p. 90; Esper, Eur.

Schmett. iv. pl. 88, fig. 2 (1786).

♀ *Acontia triradiata*, Walker, Lep. Het. xii. p. 791, n. 33 (1857).

Var. *Noctua albicollis*, Fabricius, Sp. Ins. ii. p. 218, n. 48.

Europe and Asia. Coll. B. M.

The females of the variety *T. albicollis* resemble the males of the typical form. Most of the species of this genus differ considerably in the sexes, so that many synonyms have necessarily been made.

*Tarache caffraria.*

♂ *Phalena caffraria*, Cramer, Pap. Exot. ii. p. 82, pl. cxlvii. F. (1779).

*Noctua caloris*, Hübner, Samml. Eur. Schmett. iii. fig. 372.

♀ *Acontia komaga*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 33.

South Africa. Coll. B. M.

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

RHOPALOCERA IN CENTRAL GERMANY.—During the past summer I have been on a visit to my native town, Biedenkopf, in Middle Germany. Although I did not reach there till the latter part of August, I found butterflies still abundant, in spite of the wet and cold weather in the early part of the season. The small town of Biedenkopf (about 4000 inhabitants), which is situated in  $51^{\circ}$  N. lat., and  $6^{\circ}$  E. long., lies by the river Lahn in a nest of mountains, spurs of the Westerwald, and can be reached from London in twenty-four hours. The new railway, opened a few years ago, connects the valleys of the rivers Sieg and Lahn, and passes first through the mining district by the town of Siegen, thence by a most romantic journey over the mountains down into the valley of the Lahn, where Biedenkopf is situated. Within three or four miles north-west lies the little town of Hatzfeld, on the river Eder, which, flowing northwards, forms a tributary to the Weser, and is noted for good trout and salmon fishing. At this spot stands a pretty villa belonging, I believe, to Colonel Teesdale, where the Prince of Wales is sometimes a guest. The mountains around Biedenkopf are about 500 metres above the sea-level, and the heights are wooded partly with pines and firs, but mostly with beeches and oaks. The formation consists of clay-slate, gray-wacke, and greenstone, although among the mountains are chalk districts intermixed with quartz. On the banks of the Lahn, alders, willows, and poplars grow in profusion. I will now enumerate a few species of Rhopalocera which I captured within ten minutes' walk of the town, mostly on the flowery and heather-grown slopes of the mountains:—*Papilio machaon* (common everywhere in the streets, fields, and mountains), *Colias hyale* (common), *C. edusa*, *Gonopteryx rhamni* (very common), *Argynnis latonia*, *A. dia*, *Vanessa albus*, *V. polychloros*, *V. urticae*, *V. antiopa* (common in orchards near town), *V. io*, *Argalatea*, *Erebia ligea*, *E. athiops* (very common), *E. medusa*, *Satyrus semele*, *S. proserpina*, *Epinephele ianira*, *Pararge megæra*, *Thecla betulae*, *T. rubi*, *Polyommatus virgaureæ* (common), *Syrichthus malvæ*, *Hesperia comma*. Nearly all the Rhopalocera on the British list, besides many others, occur; but I draw especial attention to the following:—*Papilio podalirius*, *Limenitis populi*, *Apatura iris* (common in mountain paths), *A. ilea* var. *clytie*, *Satyrus circe* [*proserpina*] (taken in fair numbers every season), *S. hermione*, *S. briseis*, *Colias palæmon*, *Lycæna arion* (on sunny slopes), resorts to bramble blossom, flies quickly, similar to *hyale*, and is soon lost to view. The Heterocera met with will be more fully referred to on a future occasion. For the present I will only say that *Catocala fraxini* occurs frequently on the Italian poplars planted in avenues along the main roads. Incidentally I may mention that in a wood close to the town I discovered the plant *Impatiens noli-mi-tangere*, and drew my nephew's attention to it. He has since collected a number of larvæ from it, which, from the description, I believe to be *Cidaria reticulata*.—J. JÄGER; 180, Kensington Park Road, Notting Hill, W., Nov. 1891.

RARE MICRO-LEPIDOPTERA.—Among my duplicates I found a very fine specimen of *Catoptria nimbana*. Also a third specimen of *Bryotropha obscurella*; this species is very easy to distinguish from any other. My second specimen of *Retinia margarotana* was discovered among the legions of duplicates I possess.—J. B. HODGKINSON; Ashton-on-Ribble, Nov. 1891.



**SECOND BROOD OF MIMÆSEOPTILUS BIPUNCTIDACTYLUS.**—I have been breeding evidently the second brood of *Mimæseoptilus bipunctidactylus*. The larvæ were feeding exposed on the flowers of the garden scabious, and the moths emerged at the end of October. The first brood I have bred from the young shoots of *Scabiosa succisa*, feeding internally, and as the plant grows they move from one shoot to another, and can easily be traced. The markings of the respective larvæ of the two broods are identical, but the second brood of moths are a trifle darker.—W. PURDEY; Sea View Terrace, 129, Dover Street, Folkestone, Nov. 12, 1891.

**HADENA SATURA, &c.**—Some time ago I saw it stated very mysteriously that the above rarity had been taken far North. Probably the specimens recently sent me may be the examples referred to, or others from the same source. The party from whom I received them had purchased these insects, with other species, as British. They are all on black pins, and set in our fashion. *Satura's* box-mates comprised the following:—1 *purpurea*, 1 *sacrarica*, 2 *conformis*, 2 *zinckenii*, 1 *conspicillaris*, 1 *alchymista*, 1 *armigera*. I returned them at once, although the price was left to me. They all looked as if bred and new. It certainly was a treat to see *satura*. The *conformis* were of the leaden hue, not as dark as Welsh specimens.—J. B. HODGKINSON; Ashton-on Ribble, Nov. 2, 1891.

**VARIETIES OF LYCENA BELLARGUS (ADONIS) AT FOLKESTONE.**—I have taken three very fine varieties of *L. adonis* this year, two males and one female. The female is very blue, and has a row of black spots on the fore wings just inside the white fringes. The males are very dark slate colour, with almost black fringes.—W. J. AUSTEN; Radnor Street, Folkestone.

**DASYCAMPA RUBIGINEA AND DASYPOLIA TEMPLI AT POOLE.**—I took two perfect specimens of *D. rubiginea* at ivy during the evening of October 23rd. On November 2nd a male *D. templi*, which had been captured in a house here, was given to me.—J. H. D. BEALES; Beech Hurst, Poole.

**ABUNDANCE OF CERTAIN LEPIDOPTERA AT WILLESDEN.**—I visited again my favourite field this year in May and June, finding some species unusually plentiful, which looked as if the season was going to be a better one. For instance, *Heliaca tenebrata* was the first to appear, of which I took a very large number in fine condition. As soon as this was over, *Ino statice* came out in equal force, so I likewise obtained an extensive series. My last visit to this particular spot was on June 20th, when by that time *I. statice* was quite a pest, for not unfrequently three or four would be seen upon a single clover blossom; the females on that day were more plentiful than the male. *Euclidia mi* was out in abundance at the same time, but I did not go in so extravagantly for this insect. Last year *Tanagra atrata* swarmed, but this year it was only just coming out when I left, being later than last year. Amongst others that occurred in the same field was *Emmelesia albulata*, which was very common on one side only; and a good specimen of *Drepana binaria* fell to my net.—J. M. ADYE; Christchurch, Nov. 21, 1891.

**CECULLIA CHAMOMILLÆ.**—On the 5th inst. I bred an example of this species from larvæ found in Chatham Dockyard in July last. The pupæ had been a voyage to Bermuda and Halifax during August and September,

and to Malta and back in October, but I do not think this would affect them.—GERVASE F. MATHEW; Lee House, Dovercourt, Nov. 17, 1891.

HESPERIA LINEOLA AT HARWICH.—In July, 1886, I took several specimens of, as I thought, *H. thaumas* in this neighbourhood, and at the time felt rather puzzled about them as most of them were smaller and much darker than the *thaumas* I had been accustomed to take in Devonshire, and with which I compared them, as also with some *lineola* I had purchased from a dealer, and they did not agree satisfactorily with either. I then put them aside as a probable East country variety of *thaumas*, and did not think anything more about them until the beginning of last year, when I saw Mr. Hawes' account of *H. lineola* as an addition to the list of British butterflies (Entom. xxiii. 3). I then remembered my 1886 captures, and examined them again with my series of *thaumas* and the butterflies I had purchased from a dealer as *lineola*, and which, as far as I could see, did not differ in any way from my *thaumas*, and again I could make nothing of them. Unfortunately I was then very busy, and had no time to read up descriptions, and so the butterflies were put away. Last July I took several more of these small dark Hesperids, and bred one from a pupa, which I found spun up between some blades of coarse grass. Well, a few days ago, I was transferring some of this year's captures from a store-box to my cabinets, when I came to these butterflies, and, as they were very fine and very fresh, I proceeded to replace some of my old ones, but directly I saw them alongside of my Devon *thaumas* I was again struck with the evident difference between them, and noticed that these specimens were exactly the same in appearance as those captured in July, 1886. I then determined to go carefully into the matter, and so placed all the small dark-coloured Harwich butterflies in a row, and the Devon ones beside them, together with the so-called *lineola* from the dealer, and then there seemed to be no mistake whatever that the Harwich species were abundantly distinct from the others; so then I got several books, and read up descriptions, and looked at figures, and satisfied myself that they were without doubt *lineola*, and that my purchased types of *lineola* were only *thaumas*. If I had been supplied with true *lineola* I should have made this discovery in 1886, though of course it is to a great extent my own fault that I did not, for if I had carefully read the various descriptions I could not have failed to have determined what I had captured. However, the only figures I had to refer to were rather misleading. Praun gives hardly any black streak to his male of *thaumas*, and the black margins of both species are figured about the same breadth, and the neuration of *thaumas* is shown as more distinct than in *lineola*, whereas the opposite is the case. In Lang's figure the colour is much too light, and the black margins to the wings are not broad enough, and the inner edge is too well defined instead of being gradually "shaded off into the ground colour," as Kane so well describes it. All my specimens are decidedly smaller than *thaumas*, and the males have the black streak on the fore wings very indistinct. I am glad that I was so fortunate as to breed a specimen this year, and hope, should I be here at the end of next June or beginning of July, that I may find the larvæ.—GERVASE F. MATHEW; Lee House, Dovercourt, Nov. 17, 1891.

NEW FOREST NOTES.—From the 18th of July until the end of the month I found the collecting in Brockenhurst district better than I had



expected. During the first week I had the pleasure of the company of Mr. H. Robson. Our captures were almost identical as regards the number of species, if not quite so in numbers. We found *Limenitis sibylla* commonly, and much less local than I had hitherto observed it, but only a small proportion of those taken were in good order. *Argynnis paphia* was of course abundant, but very few of the variety *valesina* were met with, although I have reason to believe that it occurred in about its usual numbers. *A. adippe* and *A. aglaia* were taken sparingly. *Apatura iris* was only seen. Larvæ of *Gonopteryx rhamni* were still common on the buckthorns, and, judging from the condition of the bushes, I should say that this species was unusually abundant in August. Heath-working produced a long series of *Gnophos obscuraria* (including one black form), and some *Hyria auroraria* in lovely condition; also two *Heliothis dipsaceus*, which gave a little trouble before they were secured. Among other species taken were *Psilura monacha*, *Calligenia miniata*, *Lithosia deplana*, *L. mesomella*, and one *L. quadra* (which species I have not taken in the Forest since 1887), *Epione apiciaria*, *Ellopiæ prosapiaria*, *Boarmia roboraria*, *B. repandata* (one banded form), *Geometra papilionaria*, *Iodis vernaria*, *Acidalia imitatoria*, *A. emutaria*, *A. emarginata*, *Melanthia albicillata*, *Cidaria dotata*, *Gnophora detersa*, *Leucania turea*, *Triphæna interjecta*, and *Anarta myrtili*. Sugar was an absolute failure in the Forest, but in the village *Mania maura* and a few other common species were attracted. Larvæ of the following species were either thrashed out or found by searching:—*Smerinthus ocellatus*, *Macroglossa fuciformis*, *Nola strigula*, *Psilura monacha*, *Dasychira pudibunda*, *Bombyx rubi*, *Odontopera bidentata*, *Eugonia erosaria*, *Ennomos angularia*, *Amphidasys strataria*, *A. betularia*, *Ephyra punctaria*, *Cidaria siderata*, *Drepana lacertinaria*, *D. falcataria*, *D. binaria*, *Dicranura furcula*, *Stauropus fagi*, *Pterostoma palpina*, *Notodonta camolina*, *N. dromedarius*, *N. ziczac*, *N. trepida*, *N. chaonia*, *N. trimacula*, *Acronycta alni*, *Panolis piniperda*, and *Gonoptera libatrix*. We were pleased with the result of our exertions with the beating-stick; but, owing to the failure of sugar to attract and the scarcity of Geometers at dusk, the night-work had certainly lost its charm.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 16, 1891.

#### NOTES ON LEPIDOPTERA BRED OR CAPTURED IN 1891:—

*Protracted larval stage of Cleora glabraria*.—On July 9th I took a few larvæ of *Cleora glabraria* in the New Forest. It was late for them, and only two came to the perfect state at the beginning of August. The rest were ichneumonised, and gradually died off; but two of them are still alive, December 18th.

*Erratic emergences of Notodonta trepida*.—Moths continue to come out, and did so on October 1st, 22nd, 26th, November 15th, and December 12th. The pupæ are, and have been, in the open air since June. They underwent some forcing last December and January, and again from the beginning of March till the end of June.

*Dasychira pudibunda*.—A freshly-emerged male was found in one of our hot-houses on December 2nd. I suppose it has been accidentally forced.

*Gonopteryx rhamni* flying in December.—I saw a specimen on December 8th flying in the sun in a large wood.

*Vanessa urticae* feeding on wild hop.—A brood was found on this plant last July, and I reared some of them on the hop. They emerged in September, and were ordinary in appearance.

*Sphinx convolvuli* was taken at Rannoch this season by a non-entomological friend of mine. He says it has been taken there before.

*Double-broodedness of Eupithecia coronata*.—I took a specimen on May 14th, and on July 22nd I took another. On July 15th, 17th, and 18th I bred specimens of *E. coronata* from some larvæ which had been beaten off hawthorn in June.—W. M. CHRISTY; Watergate, Emsworth, Hants, December 13, 1891.

CAPTURES IN LANCASHIRE AND CORNWALL.—By the kindness of friends residing at Grange I was able to again visit Witherslack in the second week of July last. My object was to secure a series of *Typhon*, and in this I was successful, the butterfly being on the wing in large numbers; but what may perhaps be of more interest is that I found *Hyria auroraria* in abundance. In the following week my friends visited the moss again, but the insect had vanished. In September I spent a short holiday at Cornwall, staying at New Quay. I did not meet with much success in hunting, however, as my best captures were only three specimens of *Anaitis plagiata*, two measuring just under, and one just over, an inch and a half across the wings. The specimens were thus smaller than those figured by Newman, and than the size indicated by Stainton; but as they belonged to the second brood this accords with Newman's note.—W. HOWARD GOULTY; Wysefield, Romiley, Nov. 14, 1891.

"SUGAR" versus FRUIT AS A BAIT FOR LEPIDOPTERA.—The relative merits of "sugar" and fruit as a bait for Lepidoptera have many times been discussed in the pages of the 'Entomologist,' but as I have seldom come across a greater contrast than is mentioned in a letter recently received from my friend Mr. Lachlan Gibb, now resident in Montreal, Canada, I think it desirable to put his experience on record, in the hope that some of our entomologists residing in fruit-growing districts may find a trial of his method of collecting to their advantage. He says:—"I have done very well in Entomology. In ——— orchard, round the crab-trees, where the fruit is rotting on the branches, I have made a tremendous haul; by day nearly all the Graptas and Vanessidæ, and at night just as many Noctuæ as I liked to take, only requiring a light and several bottles (cyanide). Sugaring earlier in the season I found very bad, there being so much blossom over here."—ROBT. ADKIN; Lewisham, December, 1891.

SUGARING A FAILURE IN HAMPSHIRE.—Having noticed from time to time the different reports on sugaring this year, I might add that my experience coincides with several. I made two or three attempts at the end of June and beginning of July, but as the bait did not attract a single insect I did not repeat the experiment until near the middle of September, when there seemed some improvement, which induced me to renew operations. On the 20th of that month the weather was very stormy, rain falling in torrents the whole day more or less, and, if anything, was rather worse in the evening; so always having had good luck on such nights, I did not fail to sugar extra trees. On approaching the last one with my brush, I observed a considerable number of specimens, which were attracted by the sugar of the previous evening, evidently revived by the rain. I was very careful not to disturb them, and lit my lantern almost immediately, when I counted between twenty and thirty specimens on the tree, most of them being *Phlogophora meticulosa*, one or two *Anchocelis lunosa*, *Xanthia flavago*, *Orthosia macilenta*, &c., and two fine *Xylina socia*; the other



trees, strange to say, had very few moths upon them; among them was another *X. socia*. I took four more of the last-named species in the best condition on succeeding nights. I believe sugaring has again been bad in the New Forest.—J. M. ADYE; Christchurch, Nov. 21, 1891.

LEUCANIA EXTRANEA AND DASYCAMPA RUBIGINEA IN THE ISLE OF PURBECK.—On the evening of October 12th I had the good fortune to take a beautiful specimen of the very rare *Leucania extranea* at sugar in our shrubbery; and by working ivy bloom in the same place I met with and secured four fine *Dasycampa rubiginea* on November 13th, and another on the following night. The latter species is decidedly rare here, as, in spite of the fact that I have worked for it pretty regularly, I can only boast of having taken one specimen previously, and that one occurred eight years ago.—EUSTACE R. BANKES; The Rectory, Corfe Castle, Dec. 15, 1891.

MACROGLOSSA VOX, Newman.—Under the name *Macroglossa splendens*, many years since, I labelled a *Macroglossa*, in the National Collection, from Australia; but, so far as I can discover, I have hitherto not published the fact that it is the insect described by myself, in P. Z. S. 1875, p. 5, n. 7, pl. 1, fig. 6, as *M. vox*, Newman. The true *Macroglossa vox* of Newman, as Miskin has recently pointed out, is evidently Walker's *M. micacea*.—A. G. BUTLER; British Museum (Natural History), Cromwell Road, London, S.W., Nov. 18, 1891.

BREEDING NOTODONTA DICTEOIDES.—I have been rather successful in obtaining this season a number of larvæ of the above species, but owing to my inability to rear them I have been much disappointed. I do not know if this insect is generally considered difficult to breed, but I found that when the larvæ were about half-grown they became very restless, leaving the birch stems and roaming about the cage. I had a large flower-pot, also a glass cylinder, whilst allowing plenty of space and air. Notwithstanding these precautions they nearly all developed a form of diarrhœa, after which the food was refused. Three reached the final stage, but only one pupated. I had one larva which lived nearly a week without food, and then it was killed for preserving. If the larva of this species is not delicate I cannot account for my failure, for they were not in any way neglected.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 10, 1891.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—December 2nd, 1891.—The Rt. Hon. Lord Walsingham, M.A., LL.D., F.R.S., Vice-President, in the chair. Mr. Henry A. Hill, of 132, Haverstock Hill, Hampstead, N.W.; Mr. Frank Nelson Pierce, of 143, Smithdown Lane, Liverpool; and Mr. Carleton F. Tufnell, of Greenlands, Border Crescent, Sydenham, S.E., were elected Fellows of the Society; and Mr. Martin Stanger Higgs was admitted into the Society. Dr. D. Sharp exhibited and commented on a number of photographs of various species of Lucanidæ belonging to Mons. René Oberthür. Mr. C. G. Barrett exhibited specimens of local forms and varieties of Lepidoptera, taken by Mr. Percy Russ near Sligo, including *Pieris napi*, var. near *bryonia*; *Anthocharis cardamines*

(male), with the orange blotch edged with yellow, and yellowish forms of the female of the same species; very blue forms of *Polyommatus albus*; males of *P. alexis*, with the hind margin of the under wings spotted with black, and very handsome forms of the female; also varied series of *Agrotis cursoria*, *A. tritici*, *A. valligera*, *Hydræcia micacea*, *H. nictitans*, *Epunda lutulenta*, *Hadena protea*, *Odontoptera bidentata*, *Cidaria immanata*, *C. testata*, *C. pyraliata*, and *Boarmia repandata*. The Rev. S. St. John exhibited two specimens of *Lycæna argiades*, taken in Somersetshire by Dr. Marsh in 1884; three specimens of *Deilephila euphorbiæ*, bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast in September, 1889; and a series of various forms of *Anchocelis pistacina*, all taken in a garden at Arundel. Lord Walsingham, Mr. Barrett, and Mr. McLachlan took part in the discussion which ensued. Mr. Jenner Weir exhibited two dark specimens of *Zygæna minos*, which had been caught by Mr. Blagg in Carnarvonshire. He remarked that the specimens were not representatives of complete melanism, and suggested that the word "phæism"—from *φαιός*, dusky—would be a correct word to apply to this and similar departures from the normal coloration of a species. Mr. C. J. Gahan exhibited specimens of the common "book-louse," *Atropos pulsatoria*, Fabr., which he heard making a ticking noise similar to that made by the "death-watch" (*Anobium*). Mr. B. A. Bower exhibited the following rare species of Micro-Lepidoptera:—*Spilonota pauperana*, Fröl.; *Gelechia osseella*, Stn.; *Chrysoclysta bimaculella*, Haw.; and *Elachista cingilella*, Fisch. Lord Walsingham and Mr. Tutt made some remarks on the specimens. Mr. R. Adkin exhibited a variety of *Anthocharis cardamines*, and one specimen of *Sesia scoliaformis* bred from a larva found at Rannoch. Mr. G. T. Baker read a paper entitled "Notes on *Lycæna* (recte *Thecla*), *rhymnus*, *tengstræmii*, and *pretiosa*." A discussion followed, in which Lord Walsingham, Capt. Elwes, and Mr. Baker took part. Mr. F. Merrifield read a paper entitled "The effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." The author stated that both broods of all three species of *Selenia*, *Platypteryx falcataria*, *Vanessa urticæ*, *Bombyx quercus* and var. *callunæ*, and *Chelonia caia* were affected by temperature in the pupal stage, the lower temperature generally producing the greater intensity and darkness of colour; some of the *Vanessa urticæ* made a near approach to the var. *polaris* of Northern Europe. A long discussion ensued, in which Mr. E. B. Poulton, Mr. McLachlan, Prof. Meldola, Mr. Barrett, Mr. Jenner Weir, and Lord Walsingham took part. Mr. W. Bateson read a paper entitled "On the variation in the colour of the cocoons of *Eriogaster lanestris* and *Saturnia carpini*," and exhibited a large number of specimens in illustration of the paper. Lord Walsingham congratulated Mr. Bateson on his paper, and on the intelligent care and method shown in his experiments, and said that he was glad to see that at Cambridge there was an entomologist ready to enter this interesting field of investigation, and perhaps at some future day to contest the palm with Mr. Poulton as representing the sister University of Oxford. He had noticed that the larvæ of *S. carpini*, if left in a box with dead food, and probably partially starved, made a light cocoon; but that when the cocoon was made under natural conditions, on living food-plants on the moors, it was of a dark colour. Mr. Poulton, Mr. Bateson, and others continued the discussion. — H. GOSS and W. W. FOWLER, *Hon. Secs.*



SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 26th, 1891.—W. H. Tugwell, President, in the chair. Mr. J. A. Cooper exhibited five specimens of *Arctia caia*, L., the red colour of the inferior wings being replaced by yellow. He remarked that from some thousand larvæ collected near Wanstead Flats, all of which had been fed under normal conditions, he had reared seven of this form, and that all emerged on the same day. As far as he could say, there were no atmospheric conditions which would account for the variation. It would be noticed that one of the specimens had a blackish fringe to the inferior wings. Messrs. Tugwell, Carrington and Tutt made some observations on specimens of this insect occasionally having the fringes and antennæ of a blackish colour. Mr. R. Adkin exhibited a specimen of *Sesia scolæiformis*, Bork., bred at Rannoch from a larva found there, and he remarked on the difficulties attending the rearing of the species. Mr. Tugwell thought the specimen was smaller than those that were obtained from Llangollen, and he suggested "assembling" as a method of obtaining males of the species, as *S. sphegiformis* and *S. culiciformis* were taken in this way. Mr. Carrington described the method Mr. Nicholas Cooke adopted to take his species, and also the plan Mr. Salvage followed. He also said the Rannoch specimens were always smaller than the Welsh ones. Mr. R. Adkin also exhibited a specimen of *Euchloë cardamines*, L., taken at Hayward's Heath, having a distinct V-shaped mark below the discoidal spot on the under side of the primaries. Mr. C. G. Barrett remarked on this form of variation as occurring in so many species, particularly the genus *Oporabia* and in *Selina irrorella*, Clereck; the V mark was caused by the union of the black scales on the two divisions of the median nervure. Mr. C. Fenn pointed out that in the specimen of *E. cardamines* shown, the black scales were not on the divisions of the nervure. Mr. Short exhibited *Acronycta pisi*, L.; dark forms of *Spilosoma lubricipeda*; and several varieties of *Melanippe fluctuata*, L. Mr. Hawes, a living example of *Polyommatus phlæas*, L., bred from ovum deposited 28th August, the larva pupating October 2nd, and, after being kept in a high temperature, emerging on the 25th inst. Mr. Hawes also stated that he had been endeavouring to obtain ova from various species of butterflies by lamp-light, and had succeeded with *Pararge megara*, L., and *Pieris napi*, L. Mr. Edwards, a saw-fly, *Albia fasciata*, from Oxted, and various species of Exotic Lepidoptera from India, Java, Brazil, and made remarks thereon. Mr. R. South, a series of *Liparis monacha* var. *eremita*, Ochs., bred from French larvæ, and remarked that it would be interesting to ascertain the distribution of this form; he had never taken it in England, although he was told it occurred in the New Forest. Mr. C. G. Barrett was of opinion that this suffused form did not occur in the New Forest, but it was found in the Midlands. Mr. Tutt said Miss Kimber had bred an exceedingly dark one from the New Forest, and Mr. Dobson had got a fine series of banded forms from the same locality. Mr. Tugwell thought that in Mr. South's specimens the darkening arose from the ground colour being darker, whereas in English specimens it was a thickening of the black scales that caused the variation. Mr. Billups stated that the ichneumon bred from the cocoon of *Attacus cecropia*, which was exhibited at a previous meeting, was *Eryptus extrematis*. Mr. R. Adkin exhibited a collection of Lepidoptera from Eastbourne, and read notes relative thereto. Observations were made by members on collecting butterflies on dull days at rest; the *Lycenidæ*, *Hesperidæ*, and *Papilio machaon* and *Melitæa athalia* were

specially alluded to. Some remarks were made as to obtaining all the information possible with regard to the reported capture of *Polyommatus virgaureæ* near Seaford.

December 19th.—The President in the chair. Mr. C. G. Barrett exhibited and remarked on a number of species collected by Mr. Russ in the west of Ireland, in particular referring to the prevalence of pale and dark forms of so many species occurring together in a locality where the climate was an exceedingly wet and stormy one; among others he instanced several species of *Agrotis*, *Cidaria immanata*, Haw., *Hydræcia micacea*, Bork., &c.; there were also specimens of *Lycæna icarus*, Rott., having black spots in the hind margin, and examples of *Pieris napi*, L., approaching *bryoniæ*. Mr. South said that the particular form of *L. icarus* occurred in the Isle of Wight and in Perthshire. Mr. Jenner Weir referred to *P. napi*, and said he had received the same form from Cavan. Mr. Fenn, in reference to the light and dark forms of certain species occurring together, said he thought wherever a variable species occurred the extremes would be found. Mr. Tutt said this was well known, but in his opinion there was generally a particular characteristic for each locality; although the whitest and palest forms of *A. tritici* occurred at Deal, yet some that were almost black were found; the majority of the specimens showed a tendency to run of a bluish tint, while those taken by Mr. Russ showed a tendency to run brown; other instances occurred with *Teniocampa incerta*, Hufn., *Noctua castanea* var. *neglecta*, Hb., and *Xylophasia monoglypha*, Hufn. Mr. R. Adkin exhibited a variety of *Pieris napi*, L., a female, in which the usual spots and apical patch of the fore wings were united to form an almost continuous submarginal band; also a series of *Asteroscopus nubeculosa*, Esp. Mr. S. Edwards, among others, exhibited *Ornithoptera brookiana*, from Borneo; and Mr. Weir remarked that until lately the species had alone represented a section of the genus, but recently an allied species had been discovered in Palawan, thus affording a further contribution to the probability that the fauna and flora of that island would prove to be more Bornean than Phillippine. Mr. J. H. Carpenter, a series of *Plusia festuæ*, L. Mr. Tugwell, a box of Lepidoptera received from Mr. Reid, and remarked that there was nothing of any importance among them; he, however, had heard that Mr. Reid had taken *Retinia duplana*, Hb., and one of the Pterophori, which he could not identify; the larvæ were found feeding on the under side of leaves of ragwort. Mr. Barrett said that the first specimens taken were referable to *turionana*; that *duplana* occurred earlier in the year; and since this had been pointed out Mr. Salvage and Mr. Reid had taken them. Mr. Tugwell also exhibited specimens of a dark *Eupithecia* from Paisley, with typical form of *Eupithecia satyrata*, to which species he thought they were referable; many members differed from this opinion. The meeting closed with a discussion on the effects of heat and cold producing variation.

—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—December 14th, 1891.—S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Willoughby Gardner, F.R.G.S., read a paper entitled "A Preliminary List of the Aculeate Hymenoptera of Lancashire and Cheshire, with notes on the habits of the genera." The author remarked that although but little had been done in the district in the order Hymenoptera, compared with the more favoured Lepidoptera and Coleoptera (of which very full local faunas had been compiled and published by members of the Lancashire and Cheshire Entomological Society), still much quiet work



had been done during a series of years by several observers; it was now very desirable, he said, that these scattered records should be brought together, so that they might be permanently preserved in a form that would serve as a basis upon which future information on the subject might be conveniently built up. The writer acknowledged the valuable assistance of the following local workers, from whose notes, along with his own, he was enabled to compile his paper, *viz.*, Miss E. C. Tomlin, Mr. J. T. Green, the Rev. H. H. Higgins, Mr. J. R. Hardy, Mr. R. Newstead, F.E.S., and the late Mr. B. Cooke. The paper included a list of 161 species hitherto recorded in the counties of Lancashire and Cheshire, giving full particulars of localities, &c.; this out of 373 species at present described as indigenous to Great Britain. The records included notes of the occurrence of such interesting and local insects as *Astata stigma*, *Oxybelus mucronatus*, *Colletes cunicularia*, *Halictus atricornis*, and *Osmia xanthomelana*. In order to afford some information to members of the Society who had not studied the order Hymenoptera, Mr. Gardner gave a running *résumé* of the general habits of the insects of each genus, *seriatim*, throughout the paper, illustrating his remarks by specimens of the various species, cases containing nests, and "life histories," &c. The President exhibited a type collection of Hymenoptera. Miss Tomlin, of Chester, a collection of Hymenoptera, and specimens of *Hylastes opacus*, Er., *Trypodendron domesticum*, L., and *Melophilus piniperda*, L. Mr. Newstead, nests and specimens of *Bombus pratorum*, *Megachile circumcincta*, *Andrena nigro-ænea*, *Colletes cunicularia*; genitalia and leg of *Crabo paluripes*. Mr. Stott, a specimen of *Chærocampa celerio*, on behalf of Mr. H. S. Clark, of Douglas, where it was captured this summer. Dr. Ellis, a collection of Coleoptera, made in the Spanish Pyrenees. The Library and Museum Committee, nests and specimens of British and Foreign Hymenoptera; and by Mr. J. T. Green, a collection of Hymenoptera.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—November 16th, 1891.—The President, Mr. W. G. Blatch, in the chair. Rev. C. F. Thornehill showed a specimen of *Sphinx convolvuli*, taken on September 30th at Burton-on-Trent. Mr. G. T. Baker, *Callimorpha hera* from Jersey and the Continent; also *Nemeophila plantaginis* var. *hospiton* from various localities. Mr. P. W. Abbott, *Nonagria geminipuncta* and *Toxocampa pastinum*, series of each from the Isle of Wight. Mr. R. C. Bradley, series of the genus *Calliphora*, including *grænlandica*, *azurea*, *cognata*, &c. Rev. C. F. Thornehill said that he had found in a cellar at Stretton, near Ashley, forty or fifty specimens of *Gonoptera libatrix*; also specimens of *Triphosa dubitata*. Rev. G. J. Nurse read a paper on "Wicken Fen and its Moths," mainly dealing with a holiday spent there this year, and including much information gathered during some years' residence there.

November 7th.—Mr. R. C. Bradley in the chair. Mr. R. C. Bradley showed a box of Lepidoptera, taken during the year at Sutton. Mr. C. J. Wainwright, *Asteroscopus sphinx* (*cassinea*) from Hanbury Park; and *Calymnia affinis* from Arley. Mr. E. C. Tye, a boxful of captures made this year, including *Chærocampa porcellus* from Sutton, *Lithosia mesomella* from Wye Forest, *Noctua glareosa* from Sutton, &c. Mr. P. W. Abbott, a boxful of this year's captures, including *Phibalapteryx lignata* from Sutton, *Noctua dahlia* from Sutton, &c. Mr. G. T. Baker, a boxful of Scotch insects, collected at various times in the Shetlands and Hebrides, at Rannoch, and Forres by the Messrs. Salvage.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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## THE PAST WET SUMMER AND ITS PROBABLE EFFECT UPON THE DEVELOPMENT OF LEPIDOPTERA.

BY ROBERT ADKIN, F.E.S.

THE year 1891 will be long remembered by entomologists on account of its cold, wet summer. It is probable that such abnormal meteorological conditions would have an effect upon the development of Lepidoptera, and any note relative thereto should be of interest. I therefore venture to record a few cases, taken from my note-book, in which the emergence of a species from pupa appears to have been spread over an unduly long period, or the growth of larvæ unusually prolonged, presumably, by reason of the conditions referred to.

From some twenty pupæ of *Sesia ichneumoniformis* obtained at the end of June, the first imago emerged on 12th July; others followed at intervals until 22nd August. Rather more than half the total number produced perfect insects, the remainder dying when fully formed. The species appears to emerge on hot sunny mornings, between 7 and 10 o'clock, and it is probable that the large percentage of losses may have been due to the comparatively small number of suitable occasions for emergence.

*Dianthæcia carpophaga* var. *capsophila*: from a number of larvæ taken in the previous autumn the imagines commenced to emerge on 3rd July, and continued to appear until 24th August.

A larva of *Plusia gamma*, taken 12th September, produced an imago in the middle of November.

A brood of *Eugonia erosaria* fed up from ova on a growing oak tree. The ova commenced to hatch on 2nd July, and the larvæ fed up very irregularly, some reaching the pupal stage, while others were still quite small. The first moth appeared 8th August, and the last 30th September. Some few larvæ that had fed on until within a few days of the latter date, assumed the pupal state, but did not produce moths.

From some sixty larvæ of *Gnophos obscuraria*, collected at



the end of May, the first imago emerged on 5th August, and the last on 30th September.

Larvæ of *Conchylis francillana*, taken in January, produced the first moth on 27th July, and the last on 11th September.

A fine young larva of *Smerinthus populi*, found on a poplar in my garden in September, fed up well until the leaves began to turn, being then but little more than half its full size; from this time it appeared to become sickly, but lingered on until November, when the trees having lost their leaves, it died, not having attained anything like its full growth.

Larvæ of *Phalera bucephala* were exceedingly common during the autumn months; the more forward fed up and took the earth in due course, but numbers of the later larvæ were not full-fed when the leaves fell.

*Acronycta psi* was also common in the larval stage; and from several collected and supplied with leaves from the later varieties of garden rose-trees, one continued to feed until the first week in December, when it retired among some pieces of rotten wood for pupation; but I am at present unable to say whether that operation was successfully performed.

The sequel appears to be that the comparatively cold, wet weather of the summer and autumn months was unfavourable alike for the emergence of the imago or the growth of the larva. The larvæ resulting from the earlier moths may have obtained necessary sustenance from the vegetation while it was in a suitable state, but those resulting from the later emergences were impoverished by the advanced state of the only food obtainable, and fell victims to disease, or died of sheer starvation.

Larvæ of many of the common species were undoubtedly more abundant than usual last autumn, but the state of things referred to in the foregoing notes, appears to indicate that a corresponding abundance of moths in the coming spring is improbable.

Lewisham, January, 1892.

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## SYNONYMY OF AMERICAN NOCTUID MOTHS.

I AM very glad that Prof. Smith has had the opportunity of personally going over our collection of Noctuidæ, and that his verdict—"in the majority of instances his synonymy is correct"—is so satisfactory.

It is well known that *Agrotis* is a most difficult group, and therefore it is not surprising that I should make some mistakes in the case of very variable and closely assimilated species. In the case of the variety of *A. turris* placed with *saucia*, Prof. Smith admitted that the mistake was a very natural one. I admit that it is better to keep species separate than to unite them without

sufficient evidence; but most entomologists will agree with me that a comparison of original types is generally sufficient. As regards structure, surely pectination or serration of the antennæ is more strictly structural than the hairy clothing of the front or eyes.

A. G. BUTLER.

## EVOLUTION OF COLOURS IN THE VANESSÆ.

BY W. W. SMITH.

THE results of Mr. F. H. Perry Coste's patient researches embodied in his "Contributions to the Chemistry of Insect Colours," which concluded in the September number of the 'Entomologist,' will doubtless give a great stimulus to the study of the enchanting subject. Having studied that gentleman's series of papers with care and interest, they seem to me to greatly advance our knowledge of the evolution of insect colours, at least in the Lepidoptera. With our present knowledge of the genealogy of species in some genera, it would be difficult to give their descent with accuracy. The New Zealand *Vanessæ*, however, seems to me to afford a good example of the evolution of colour in the order advanced by Mr. Coste. In *Pyrameis itea* (probably the oldest living ancestor of the *Vanessæ*), the broad oblique central band, with the large trifold spot outside the cell, are yellow; the secondaries are chestnut-red, becoming pale brown at base, and margined with black; two of the four minute discal black spots (or extremely rudimentary ocelli) are faintly pupilled with lilac. In our form of *cardui* (var. *kershawi*), three of the four discal spots are pupilled with pale blue; the whole four are larger, and are in a stage of development in advance of *itea*; the oblique band on the primaries and discal area of secondaries, although "broken up," occupy an intermediate stage in tone and arrangement of colours between *itea* and *gonerilla*. In *kershawi* there are two additional white spots on the primaries; in *gonerilla* there are four, all more or less suffused with blue. The four discal black spots on secondaries of *gonerilla* exhibit a further stage of development in *kershawi*, and their position is slightly altered; the oblique belt on primaries and discal area of secondaries are scarlet, on a black ground.

These crude remarks are only intended to apply to the New Zealand species mentioned; but there are many other species occurring in different countries which appear to occupy an intermediate position. I, however, think that *itea* is one of the oldest living representatives of the *Vanessæ* known to entomologists. The same may be said of *Erebiola butleri*, Fereday, in the Satyridæ. The latter is found only in New Zealand at Alpine heights. The former occurs also in Australia. The question of



the geographical distribution and development of both groups from these apparently primitive, or, at least, oldest-known types, presents an open field to entomologists who devote their time to the study of the subject. Perhaps I should add that the white spots on the primaries of *cardui* are opposed to this order of development in the *Vanessæ*; but the greater absorption power of the ground colour of the species will explain this apparent anomaly. I, however, have seen one specimen with one of the large spots near the cell pale yellow.

Ashburton, N. Z., November 9, 1891.

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## EVOLUTION OF INSECT COLOURS.

By F. H. PERRY COSTE, B.Sc., F.C.S., F.L.S.

I AM glad to learn from Mr. Cockerell's remarks (Entom. xxiv. 278) that he now agrees with me as to the evolutionary relations of red, yellow, white. Mr. Cockerell charges me with crediting him with a theory which he never adopted, *viz.*, that the order was yellow, white, red; but he overlooks the fact that in attributing this theory to him I did so only very doubtfully, and marked my uncertainty as to his position by a query (Entom. xxiv. 209); and, furthermore, that in a footnote I stated that since writing the passage in the text, I had found in my notes a reference to some remarks by Mr. Cockerell, from which I inferred that he did not advocate the yellow, white, red, order. Nevertheless, it seemed desirable to retain the arguments as they stood, since even if Mr. Cockerell did not advocate the yellow, white, red, order of evolution, I could not know but that somebody else might; and, therefore, to make my own position logically secure, it was necessary to meet and dispose of any objections that might possibly—even if improbably—be made.

As a matter of fact, the arguments in the concluding passages of my articles were formulated at an early stage of my experiments, when it appeared of vital importance to disprove the theory that yellow preceded white. I did not then know where Mr. Cockerell would put red; but only two suppositions seemed possible,—either that he would adopt the lineal order, yellow, white, red; or the bifurcate order, yellow-white and yellow-red. I gave a good deal of thought to the subject, and my reasoning was given in the concluding passages referred to. Originally it had been intended to state these arguments at an early stage in my articles, but for various reasons they were adjourned. By the time that my articles were nearly finished I had come to consider the dispute as of but minor importance, feeling that I had tolerably well demonstrated my own theory; but having twice promised to argue out the question with Mr. Cockerell, I felt in honour bound to fulfil

my promise, and to meet any objection that he either did or might raise. This will satisfy Mr. Cockerell, I hope; and I am glad to see that he admits my discussion of his non-existent objection to be of service.

Finally, I may add that the varieties which Mr. Cockerell mentions of *Sphinx* and *Tortrix* are of the very greatest interest to me, since they are exact fulfilments of the predictions which I made whilst in ignorance that such varieties existed.

December 22, 1891.

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## NOTES ON BRITISH LEPIDOPTERA.

BY RICHARD SOUTH.

UNDER the above title I propose to make a few remarks on the variation of certain species of Lepidoptera occurring in Britain. At the same time the most trustworthy points of distinction between closely-allied species will be mentioned, and, in some instances, the perplexing matter of synonymy referred to. The subjects of the present paper are *Noctua brunnea* and *N. festiva*. The next will deal with a Geometrid genus.

### NOCTUA BRUNNEA.

In 1886 and 1887 I obtained large numbers of larvæ of this species from North Devon. They were found feeding on bilberry (*Vaccinium myrtillus*), and a species of wood-rush (*Luzula*), both plants growing in luxuriant masses in the small woody glen where the larvæ were collected.

Although there was considerable variation as regards the coloration of the larvæ, the markings were not subject to any material modification, except so far as concerns the transverse line or patch on the dorsal area of the 12th segment. This was always some shade of yellow, but sometimes so pale as to appear almost white; the width, too, of this marking was also variable, often broad and conspicuous, but in some few individuals represented by an exceedingly thin and very short line.

From the specimens bred I selected an extensive and most variable series, and it is to these that my remarks will more especially apply; but I shall also have occasion to refer to series of the species from Aberdeen, Perth, and Rotherham, kindly sent to me by Messrs. Reid, Ellison, and Young.

The following is a general description of *Noctua brunnea*:—Fore wings brown, with a glossy purplish reflection, traversed by three usually distinct, double, wavy, darker brown lines; the first of these (basal) is straight and extends only to the median nervure, the second (inner) is slightly oblique, and the third (outer) curves to the first median nervule, and from thence descends straight to the inner margin; *the pale, narrow, wavy, submarginal*



*band* is inwardly bordered with dark brown, especially towards the costa, and this colour not unfrequently fills up the space between the submarginal band and outer line; on the costa there are three yellowish dots between submarginal band and outer line, and two dark spots at the commencement of each of the double lines; the reniform stigma is distinctly outlined, and often filled up with ochreous, except at its lower end, which is dark grey or even blackish; the orbicular is not always well defined; the claviform is represented by a round black spot immediately below the orbicular; there is a conspicuous black or blackish quadrate spot between the reniform and orbicular, a round or triangular one before the orbicular, and sometimes a minute one edged with white between the inner and basal lines; generally there is a brown transverse shade from the quadrate spot to the inner margin. Hind wings pale fuscous brown, with an inconspicuous central lunule; fringes pinkish.

*Colour variation.*—From the normal brown with purplish reflection the colour of *N. brunnea* varies in two principal directions; one of these leads to a pale reddish brown, tinged with faint violet-grey, very like some forms of *N. festiva*; and the other to a fuliginous brown, suffused with ashy grey. Examples of the last are in the Rotherham and Aberdeen series, whilst the paler forms are among the specimens from N. Devon. There are, however, N. Devon examples which are quite as dark in colour as any of the specimens in either of the northern series. The ashy grey and the violet-grey suffusion varies greatly in intensity; in some specimens the former is very strong, giving the insect a grey-brown coloration. In a few specimens from N. Devon the discal area is tinged with ochreous.

*Variation of the stigmata.*—Reniform outlined in ochreous, the centre occupied by a curved ochreous line, which in many examples is thread-like, in others only to be traced with a lens, whilst in others again it is broad or very broad. It appears therefore that the typical character of the reniform stigma depends on the dilation of the central ochreous line. In one example from N. Devon there are some pale ochreous longitudinal streaks just beyond the reniform. The orbicular stigma, usually ill-defined and only partially outlined in ochreous, is in some specimens well formed and even conspicuous. The reniform and orbicular stigmata sometimes exhibit a tendency to amalgamate at their lower extremities, as in *Dianthæcia cucubali*. In other specimens the outer edge of orbicular and inner edge of reniform are united by a continuance of the ochreous outline along the median nervure from one to the other; in these cases the stigmata are aberrant in contour. The claviform stigma, most frequently represented by a black dot just below the orbicular, is in some specimens fairly well-defined, and its outline can be traced right up to the inner transverse line.

*Variation of the discoidal markings.*—Occupying the discoidal cell, the space between the subcostal and median nervures closed by the reniform, is a black wedge-shaped dash, generally extending from the inner edge of the reniform to inner transverse line, and its continuity broken by the orbicular. In some of the specimens in each series this is represented by a quadrate spot, very little darker than the ground colour, between the stigmata, and there is no trace of it before the orbicular.

*Variation of the transverse markings.*—The basal and inner lines are sometimes very indistinct, and in a specimen from N. Devon the submarginal pale band is not clearly defined; the outer line is invariably present, but in a few instances its duplicate character is not apparent. In one specimen from N. Devon the inner line is less oblique than usual, and the space between it and the basal is filled in with dark brown, thus forming a basal band from costa to inner margin; two of the Aberdeen specimens also have this band, but, as their general tone of colour is darker, the aberration is less striking.

*Variation of the costal markings.*—The yellowish spots, although sometimes very minute, are almost always to be traced, but in a few specimens one or more of the dark spots are absent or obscured. In a few specimens from each locality the edge of the costa is yellowish from outer line to the base, interrupted by the dark spots, and a dark dash before the basal line. Hübner's figure 121 represents a specimen with a yellowish streak along the apical portion of costa, and I have a N. Devon specimen marked in this way, but it does not agree in other respects with the figure.

Except that they are larger, some of the pale specimens from N. Devon are exceedingly like some English *N. festiva*. There is, however, a difference between the two species, which is at once perceived by anyone acquainted with the various forms of *brunnea* and *festiva*, but this is not easily expressed in a few words. Fortunately it is unnecessary to go into minute points of difference, as we have a valuable differential character in the submarginal band, which is wavy in *brunnea*, but only indented below costa and towards inner margin in *festiva*.

Some examples of *N. brunnea* bear a strong superficial resemblance to *N. dahlia*. In the latter species the submarginal band is somewhat similar to that of *N. festiva*, but the area beyond this band is always as dark as the darkest colour on the rest of the wing. In *brunnea* the marginal area is invariably of the same tint as the palest colour on the other portion of the wing.

#### NOCTUA FESTIVA.

Fore wings ochreous, ornamented with brown of various shades; orbicular usually of the ground colour; reniform usually only outlined in ochreous, but sometimes filled up with the same



colour, and with a dark spot at its lower extremity; the claviform is usually represented by a blackish dot below orbicular, but in some examples it is completely outlined and filled up with ochreous. There is often a blackish quadrate, sometimes roundish, blotch or spot between the stigmata, and a triangular one before the orbicular one; sometimes there is also a black dot, edged externally with whitish, between the inner and basal lines; these marks are the exposed sections of a black wedge-shaped streak in the discoidal cell. Three sinuate, double, dark lines traverse the wings, the basal terminates just below the median nerve, the inner is sharply angulated near the costa and above inner margin, and the outer is curved below costa, and then runs parallel with outer margin; *the submarginal band is pale, indented below costa and before inner margin.* All these lines originate in dark spots on the costa, and there are often three pale spots between outer line and submarginal band. Space between the outer line and submarginal band is often filled up with brownish. A series of black spots on outer margin, and there is also frequently a series of white dots just beyond the outer line. Hind wings grey-brown, with a darker central lunule, and, sometimes, transverse line, the latter, when present, being often bordered externally with paler. Fringes ochreous, with a rosy tinge.

The foregoing is not a description of an individual specimen of *N. festiva*, but is drawn up for the purpose of conveying a general idea of the species. Although I have a large number of specimens of the species, I am only able to select examples which nearly agree, but are not exactly identical with Hübner's five figures of this species.

The colour of *N. festiva* ranges from pale ochreous to chestnut-brown, and from grey to fuliginous grey-brown; so far as I know, the greyish coloration is confined to northern *festiva*. The ornamentation is subject to modification of a comprehensive and most interesting character, and to a large extent the variation exhibited in my series is analogous to that of *N. brunnea*. The transverse lines are strongly defined in some specimens, whilst in others they are mostly obsolete; the discoidal cell between the stigmata is often no darker than the rest of the fore wing, but sometimes there is a reddish quadrate spot in place of the usual black one; the stigmata may be only faintly outlined, and sometimes the orbicular is completely lost. The brownish shade between outer line and submarginal band is frequently only represented by a short transverse dash from costa, and even this in one or two examples in my series is eliminated. Sometimes there is no trace of a claviform stigma. This is what may be termed the ordinary variation of *N. festiva*; but there are a few aberrations of the species which deserve special consideration, and I therefore venture to briefly describe them as follows:—

A. Fore wings pale greyish ochreous; stigmata and transverse lines very indistinct; a purple-brown dash from costa passes between the stigmata, and unites with a purple-brown band extending from lower end of reniform to inner margin. Hind wings grey-brown, the lunule is reduced to an indistinct spot, and there is an indistinct pale central transverse band, but no dark line. Fringes pale grey, tinged with pinkish. A male. This specimen was bred from larvæ found in North Devon; two other specimens bred from the same lot of larvæ are modifications of this form.

B. Basal half and outer margin of fore wings light ochreous; other portions pale reddish brown, limited inwardly by a purplish-brown dash from costa, which passes between stigmata and unites below the reniform with a band of the same colour running to the inner margin. The stigmata are very faintly outlined; transverse lines obsolete. Hind wings grey-brown, with darker lunule, central and submarginal lines, the latter followed by a pale interrupted band. Fringes of fore wings pale brown, preceded by a row of black dots; of hind wings ochreous grey, with a faint rosy tinge. A female example. Received from Carlisle, but I have no information as to exact locality. I have a somewhat similar specimen from N. Devon.

C. Similar in character of marking to B, but the basal half and outer margin of fore wings are violet-grey, and the brown of other portions has a purple tint; the transverse lines are traceable, and the reniform is outlined in violet-grey; fringes rosy. Hind wings grey-brown, with central and submarginal transverse lines; fringes ochreous, tinged with rosy. A small male. This very pretty form, which was received from Forres, appears to be a modification of Hübner's 114.

D. Fore wings violet-grey, with some vinous-red hairs at the base above inner margin; transverse lines distinct; stigmata paler, with a vinous-red quadrate blotch between them; there are some pale dots beyond outer line, each dot followed by short longitudinal black streaks; the outer margin is darker than rest of the wing; fringes rosy, preceded by a row of black dots. Hind wings grey-brown, with darker outer border; fringes ochreous, tinged with rosy. A male specimen. Mr. Reid, of Pitcaple, Aberdeenshire, was good enough to send me this very handsome form, together with other varieties of *N. festiva* from his district. There is another specimen, also a male, of this form in the series, but it lacks the vinous-red hairs at the base of fore wing.

E. Fore wings reddish brown, basal half very slightly paler; orbicular indistinctly outlined in blackish, with an inner edging of pale ochreous; reniform outlined in blackish, with a brownish centre, and filled up with pale ochreous; transverse lines ill-defined, central shade and band beyond outer line darker brown. A female specimen. This is also in the Pitcaple series.



In the above remarks on the variation of *N. festiva*, I have included the small moorland and mountain form, usually, and as I think, correctly, referred to *conflua*, Treits. It has been stated that the fore wings of true *conflua* are narrower and more pointed than those of *festiva*; but, as I read Treitschke's description of this insect, I cannot find that the shape of the wings is mentioned by him, and I consider that his description of *conflua* applies very well to certain small forms of *festiva* in my own collection. There is much diversity in the length of the fore wings as compared with their width, both in Scotch and English specimens of *N. festiva*. The fore wing of some examples is in length barely twice the width, whilst in other specimens it is more than twice the width. Again, the apices are much rounder in some specimens than others, and in a few they may be termed pointed; but these examples are not all of the small *conflua* form. Southern specimens vary in size from  $1\frac{1}{4}$  in. to  $1\frac{1}{2}$  in. Scotch mainland specimens range from 1 in. 2 lines to 1 in. 5 lines, and Shetland from 1 in. 3 lines to 1 in. 5 lines; but only one of my eighteen Shetland specimens is less than 1 in. 4 lines. It would seem therefore that this local form is fairly uniform in the matter of expanse.

With reference to *conflua*, Treitschke himself says that his type was taken on the Reisingebirge; these mountains are in the north of Bohemia, separating that country from Silesia. Duponchel, in the seventh volume of the 'Histoire Naturelle des Lepidoptères,' &c., published in 1827 (the same year that Treitschke published his description of *conflua* in 'Schmetterlinge von Europa,' vol. vi. pt. 1), says that the insect in question was originally taken in Hungary in 1824, and that Treitschke sent it to Boisduval under the MS. name of *Apamea conflua*. At the time this insect came under his notice, no description or figure of it had been given to the entomological public; so Duponchel figured and described it under the name of *Noctua (Apamea) conflua*, Treits. I have this figure before me, and some specimens from Aberdeen, which are certainly the same form, although not exactly identical in every particular. The following is a description of the figure:—

Fore wings pale ochreous brown, the basal area limited by a transverse curved reddish-brown band; submarginal band, a spot before the orbicular, a larger one between the orbicular and reniform, also reddish brown; the reniform is of the ground colour, the orbicular is rather paler. Hind wings fuscous grey, with a broad darker hind marginal border.

Duponchel says the insect is reddish grey; the stigmata almost effaced, and the space between them rust-colour; and this description fits the Aberdeen specimens referred to almost exactly.

There is no great difficulty in separating typical *conflua* from

typical *festiva*, but when an extensive series of *festiva*, comprising specimens from all parts of Britain, is examined, the impossibility of specifically separating *conflua* will be admitted. An attempt has recently been made to establish the Shetland form of *festiva* as the true British representative of Treitschke's *conflua*. Although it might possibly be a present convenience to adopt a name for an insect which does not properly belong to it, the expedient would certainly lead to future confusion. The Shetland form of *festiva* is as distinct from *conflua* of Treitschke as it is from Hübner's type of *festiva*; therefore, we must retain for it the varietal name of *thulei*, which has already been given to it by Dr. Staudinger, I believe, but I am not quite certain of the author. *Thulei* undoubtedly appears to be specifically distinct from *festiva*, and if it were not for the fact that it is clearly connected by intermediate forms with that species, I should be inclined to consider it distinct. As I have mentioned above, this form is fairly uniform in wing-expansion, but it varies considerably in colour and ornamentation, some of the specimens being almost fuliginous brown, with pale greyish brown transverse lines, with or without black spots between stigmata; others are pale reddish brown, with indistinct paler transverse lines, but the space between outer line and submarginal band filled up with dark brown, and the three sections of black discoidal streak exposed. One specimen is pale greyish, with paler transverse bands in place of the usual lines, the discal area is clouded with brownish, and the space between the outer and submarginal bands conspicuously darker; the hind wings have a darker lunule and pale central line. The majority of the specimens are grey-brown or dark reddish brown, with the space enclosed by each of the double transverse lines paler; the space between outer line and submarginal band always, and that between basal and first lines sometimes, filled up with darker; the reniform and orbicular stigmata, with usual black spots, are generally well-defined, and the claviform is sometimes bar-shaped. The hind wings are always fuscous grey-brown; the fringes are ochreous, frequently, but not invariably, tinged with pinkish; a distinct central lunule is rather the exception than the rule.

*Subrufa* (Haworth=*festiva*, Hübner, 467 and 468) is the form without black spots between the stigmata or before the orbicular. Godart's figure (pl. 62, fig. 1, *dahlia*) may represent a modification of this form, but certainly is not *dahlia*.

*Congener* (Hübner, 617=*festiva* ♀ Godart, pl. 61, fig. 5) is reddish in tint, especially on the median area; all the markings well-defined. Neither of these forms are uncommon.

In some specimens of *N. festiva* from Germany, in Mr. Leech's collection, the discoidal cell is occupied by an intensely black cuneiform streak, which extends from the inner edge of



reniform almost to the base of the nervures; the orbicular is somewhat smaller than usual, and entirely surrounded by the black. In these specimens the claviform is also unusually well developed, but curiously formed; it consists of a pale spot, of the same size and shape as the orbicular, encircled with black, and with a black wedge-shaped dash from its outer edge. It would be very interesting to hear that a form similar to the above was known to occur in Britain. *Noctua descripta*, Bremer, which occurs in the Amur and Japan, is not unlike some varieties of *N. festiva*, but the submarginal band is differently formed. Prof. Smith's description of *Noctua hospitalis*, Grote,\* seems to agree with some British forms of *N. festiva*.

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## LEPIDOPTERA IN THE NEIGHBOURHOOD OF ROLDAL, NORWAY.

BY THE REV. F. A. WALKER, D.D., F.E.S.

BREIFOND HOTEL is most charmingly situate on a steep grassy slope overlooking the centre of the lake and valley of Roldal, with craggy heights and rugged scaurs in the immediate background. On the opposite shore of the lake other hills, of similar aspect and elevation, are not wanting. These are still more abundantly clothed with pine-wood and copses of birch, and are reproduced, along with their snow-streaked summits, in the glassy waters of the lake, as in a mirror, to the delight of the beholder, as he gazes towards one end of the lake where, nearly three miles off, the church, hotel and hamlet of Roldal may be seen; or else directs his eyes four miles in the other direction, where the lake terminates on that side also, and the upward ascent is commenced in quest of the picturesque surroundings of Naes, along the road which up to that point has skirted the water-side. To the rear of Roldal village rises the mighty Sæter, over 4000 ft. in height, with its deep snow drifts, mountain tarns, lengthy Alpine pass, innumerable patches of snow, and, in some spots, even plateaux of the same, waterfalls, and torrents. As some misconception has prevailed respecting the nomenclature of this district, it may tend to make matters clear if I observe that Breifond is the name of the hotel; also of the glacier on the other side of the lake, nearly opposite but six miles away among the hills, and only to be reached after a steep climb. Haarre (or Horre), the title given to the new chaplaincy to which I am the first appointed, is the designation of the steep mountain slopes that stretch upward to the rear of the Breifond Hotel. Roldal is the most comprehensive term, and includes the whole of the valley and lake.

\* 'Revision of the Species of the Genus *Agrotis*,' Bull. U. S. Nat. Mus. No. 38.

With regard to the Flora of the neighbourhood, there is an abundant undergrowth of such plants as *Campanula latifolia*, *Viola tricolor*, *Matricaria inodora*, *Geranium sylvaticum*, two or three species of *Hieracium*, *Rhinanthus crista-galli*, *Galeopsis versicolor*, one or two kinds of *Stachys*, *Ranunculus acris*, and the bilberry and dwarf juniper everywhere. Other plants that may be enumerated are the wild strawberry, *Orchis maculata*, *Eriophorum*, *Saxifraga pyramidalis* (locally known as the bride's flower here), *S. stellaris*, *S. nivalis*, *Rubus chamæmorus*, *Melampyrum*, and *Aconitum napellus*. Certain of these last only occur, or at least are met with more abundantly, at a considerable elevation on the mountain side, and close to the snow range.

As regards Entomology, diurnal Lepidoptera are by no means numerous. Pieridæ are only represented by *Pieris brassicæ*, not, however, plentiful, and one or two specimens of *P. rapæ*. Vanesidæ by one solitary specimen of *V. cardui*, and only two or three specimens of *V. urticæ*. There are, however, numbers of the larvæ of the latter kind feeding. There are three species of *Erebia*; of these by far the commonest is *E. ligea*, found from an elevation of about 1400 to 2000 ft., and especially in the neighbourhood of the birch copses, the buttercup and hawkweed being the flowers that it chiefly affected. Quite the best locality for this kind proved to be a succession of two or three meadows situate about five miles from Roldal, at the foot of the ascent to Haukalid Sæter, and boggy in places; and the same remark applies to the occurrence of *Argynnis pales* and var. *lapponica*. The second species of *Erebia*, but occurring very sparingly in comparison of *E. ligea*, is *E. medusa* var.; and the third kind, *E. lappona*, alias *manto*, with grey under side of lower wings and smaller ocelli on upper wings, only found close to the snow range at an elevation of nearly 4000 ft. on the Sæter, and at 3000 ft. on Haarre Mountain, but never lower than the last-named elevation. Twelve specimens of this last butterfly were captured. Its scarcity (alluded to in Mr. Norris's "Notes on Butterflies from the Apennines" [Entom. 277]) is in part to be accounted for owing to the storms of wind and rain so frequently prevailing on the cloud-capped heights where, alone, it is to be found; while for other butterflies all was sunshine in the vicinity of Roldal Lake beneath. One or two specimens of *Argynnis aglaia* were seen daily, and occasionally more, and this species apparently increased in frequency towards the close of July. Three other species of *Argynnis* were also captured, namely, *A. pales* var. *lapponica*, *ino*, and *euphrosyne*; *pales* and *lapponica* proving very abundant, and far outnumbering the two latter kinds. *Melitæa cinxia* was fairly common at the beginning of July, but faded and worn, in this respect furnishing a marked contrast to the specimens of the same butterfly that I took at Granada in May. To all appearance it had quite disappeared before the end of July. Of *S. mæra* I suc-



ceeded in taking about a dozen specimens; it was noticed almost daily, flitting up and down the high boulders by the side of the road bordering the lake, but was nowhere very plentiful. *Cœonympha pamphilus* was represented by two worn specimens taken at Naes. Of *Chrysophanes phlœas* I only captured one specimen, and only saw, so far as I recollect, one more. *C. chryseis* and *C. virgaurea* proved about equally common. I captured a long series of both sexes of each of these two species. *C. chryseis* is represented by more females, and *C. virgaurea* by more males. The latter species is, I think, rather more local, as well as later in time of appearance. Genus *Polyommatus* was represented by *P. alexis* and *P. ægon*, both fairly common. Hesperidæ by one solitary specimen of *Pamphila sylvanus* taken at Buar-Brae, near Odde. Lepidoptera-Heterocera were not numerous represented, so far as my captures are concerned. Noctuidæ: *Charæas graminis*, *Caradrina cubicularis*, *Agrotis segetum*, *A. candelisequa*, *Apamea fibrosa*? Geometridæ: *Eubolia mensuraria*, *Fidonia atomaria*, *F. brunneata*, *Anaitis plagiata*; also a species of *Eupithecia*. Of Crambidæ, *Crambus pascuellus*. All the above-named moths were taken at Roldal. Another specimen of *Anaitis plagiata* was captured at Bratlandsdal, as well as *Boarmia repandata*.

As regards Neuroptera, I took one specimen of *Æschna juncea* in the outskirts of Bergen, and one of *Æ. pratensis* on my return drive from the Bratlandsdal, where there was a wall of rock immediately to the right of the road, and a foaming torrent close beneath on the left. The pony drawing my carriole was advancing at a fast trot, and the dragon-fly came tilting in an opposite direction between the vehicle and the cliff. At the moment of my catching it I made certain that I had lost it, as the hoop of the net sprang out of the ferrule. Great quickness of eye and hand on this particular occasion alone enabled me to secure a species which was previously unrepresented in my collection, and I am convinced that I might make many attempts without meeting with like success. Of *Æschna juncea*, also new to my collection, I only saw and took the one specimen above recorded. Of *Æ. pratensis*, possibly six or eight in all were noticed, some darting above the beds of the boulder stream and foaming mountain torrents, and one or two flying over boggy ground in the vicinity of the snow-fed tarns and runlets at a much higher elevation. Phryganidæ are represented by three specimens from Roldal Lake. One may possibly be *Limnephilus griseus*; the other two belong to a larger species. Among the Coleoptera may be enumerated *Geotrupes stercorarius*, *G. sylvaticus*, *Cetonia ænea*, *Aphodius fossor*, *A. depressus*, *Calathus melanocephalus*, *Nebria olivieri*, *Coccinella septempunctata*, *Philonthus æneus*?, *Agriotes aterrimus*, *Chrysomela marginata*, *Carabus violaceus*, *Pterostichus* sp.? All the above from Roldal. *Silpha rugosa* was obtained from a reindeer's skull on the peat moss at

Haukalid. *Necrophorus mortuorum*, *Lina ænea*, and *Trichius fasciatus* occurred at Buar Brae. Of these species, *Lina ænea* infested the hazels in thousands along the road to the glacier, and its larvæ in particular were speedily reducing the bushes to a skeleton condition. The handsomely-barred *Trichius fasciatus* was found exclusively on the blossoms of the scabious, where it bore a close superficial resemblance to a humble bee. Among Hymenoptera may be enumerated, from Roldal, *Bombus lapponicus*, *B. agrorum*, *B. subterraneus*; from road to Sæter, *B. lucorum*, *B. subterraneus*; from Bratlandsdal, *B. lucorum*, *B. agrorum*; from Buar Brae, *B. lucorum*, *B. agrorum*, *B. lapponicus*; from Bergen, *B. agrorum*. Also from Buar Brae a single specimen of *Vespa media*, and of *Tenthredo chloros*; from Roldal, *T. mesomela*, *Formica nigra*, *Allantus arcuatus*, *Odynerus pictus*, *O. (Lionotus) tristis*, *Megachile centuncularis*, *Lyda histrio*, *Ophion luteum*, and two or three unnamed species of Ichneumonidæ. The Diptera of Roldal include *Calliphora vomitoria*, *C. grœnlandica*, *Sarcophaga mortuorum*, *Scatophaga stercoraria*, *Musca cæsar*, *Eristalis tenax*, *E. similis*, *E. nemorum*?, *Mesembrina meridiana*, *Oliviera lateralis*, *Sarcophaga hæmorrhoidalis*, *Helophilus tumulatus*, *H. frutetorum*, *Chrysotoxum fasciolatum*, *Polietes lardaria*, *Hæmatopota pluvialis*, *Scatophaga* sp.?, *Therioplectes auripilus* (*tabanus*), *Volucella bombylans*, *Eristalis arbustorum*, *Scyphus ribesii*, *S. sp.* allied to *corollæ*, *Platycheirus manicatus*, *Syrirta pipiens*. On the road to Sæter, *Therioplectes auripilus*, and *Hæmatopota pluvialis* once more; and from Buar Brae, *Volucella bombylans* and *Empis tessellata*. Orthoptera conclude the list with a single specimen of a common species of *Pezotettix*.

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## USE OF THE HAIRS OF *ACRONYCTA ALNI*.

By MAURICE FITZ-GIBBON.

THE larva of this insect is unique, among those which have come under my notice, as having two perfectly distinct forms in the course of its larval existence. Into these forms I have made some examination. The first form, which it assumes for the purpose of escaping the notice of birds and other enemies,—the entomologist no doubt included,—I shall call the *Cryptic*\* (*κρύπτω*, I hide) or “concealing” form. In this form, which the larva wears until the last moult, a bird’s dropping is most successfully imitated; and as the larva lies on the *upper* side of an alder leaf, with its half-curved body gradually shading from white to grey and from grey to brownish black, the whole presenting a half shiny, half greasy appearance, not one in a hundred of non-entomologists would believe that the somewhat unpleasant-

\* This designation is borrowed.



looking object was alive. When the time comes for the larva to moult for the last time, it is then too large to any longer hope to deceive the eyes of its enemies under its previous disguise, and accordingly a complete change takes place. All this time it has possessed on the second segment four indistinct hairs—two on each side; and on the remaining segments two—one on each side.

Now, on assuming its final coat, the hairs on the second, third, fourth, fifth, sixth, seventh, eighth, *tenth*, and eleventh segments are magnified considerably, being now about the thickness of a horse-hair, and at the tip of each, presenting the appearance of having been hammered flat, the hairs on the other segments remaining rudimentary. These hairs, and especially the double number on the second segment, give the larva the most formidable appearance imaginable.

In other respects the body changes in a very remarkable way to a ground colour all over of the most intense metallic green, identical with that so familiar to all of us on the wings of *Z. filipendulæ*; while on each segment after the head there extends laterally a broad rectangular streak of bright yellow. This combination of colour,—the dark green and bright yellow,—together with the flat-tipped bristles, unites to give one that uncomfortable sensation we all experience on seeing a wasp in too close proximity. To this form I give the name *Sematic*\* (*σημα*, a warning).

But the bristles have not yet done all their work. When the time comes at which the larva intends to undergo its change to a pupa, it descends the tree, and singles out some nice rotten stick lying on the ground, and this it excavates with its powerful mandibles. In this process of excavation,—and in the case of one larva I watched the process for four hours on end,—much sawdust is formed; and as the work advances, and the larva gets farther and farther into the wood, he finds it necessary to retract his body, every now and then, to sweep out this obstruction, and in this action the flat-tipped bristles are of the utmost service, for each bristle as it comes out brings along with it one, two, or three fragments of wood, and, of course, “every little helps.” It is extremely interesting to watch this process of excavation going on. When the larva considers he has dug in far enough, he sets himself to widen his domicile; and when he has made it roomy enough to turn completely round in,—a work in which the bristles come in useful again,—he enters it finally, and, after a thorough sweep out, reserves the last few fragments of wood, and with them spins a slight web in the aperture of his retreat, and then resigns himself to internal and external metamorphosis, after which he lies quiet till the ensuing June brings him out a perfect insect.

\* This designation is borrowed.

I have dwelt more particularly on the subject of the bristles, because it has occurred to me,—what I have never seen or heard suggested before,—that these very pronounced bristles, in the case of several of the genus *Acronycta*, are specially intended for this sweeping-out process during excavation of the pupa's winter quarters. This is yet more apparent in the case of *Acronycta leporina*, which when, after the last moult, it enters on this excavating process is nothing more than one great silky brush. Another instance is *A. megacephala*, in whose case I have observed the same use of the hairs, though the tips are not flattened in either of these insects. Of course I only refer to those larvæ in which the bristles become pronounced in the last moult, many other larvæ possessing more or less defined bristles, varying in proportion to their size throughout their larval existence.

Mr. Newman, in his work, makes no mention whatsoever of the first form of the larva, and in stating that the hairs are pronounced on every segment he is scarcely correct. *A. alni* seems to have occurred pretty generally this year; upwards of a hundred were taken in the New Forest this season by one collector.

Dublin, Dec. 18, 1891.

## THE PAISLEY "PUG" (*EUPITHECIA CASTIGATA*, VAR.).

By W. H. TUGWELL.

For several years past our Paisley friends have sent us a melanic form of some undetermined *Eupithecia*. This insect has been a puzzle to many lepidopterists, and has been named in turn *E. albipunctata*, *E. satyrata*, *E. trisignata*, and *E. virgaureata*; but evidently all these are errors of differentiation, as, when placed with these species, they are clearly not at home.

During the past autumn my friend Mr. A. M. Stewart, of Paisley, most generously sent me several imagines of this insect, both bred and caught examples; he, too, kindly sent me three pupæ, part of a brood he had reared to that stage from ova deposited by a captured female. The young larvæ, on hatching, were supplied with a selection of all likely plants growing in the locality in which they are found. Heather (*Calluna vulgaris*) was the food they attached themselves to, and fed up on it entirely. Mr Stewart also sent me a description of the larvæ, which, like many of the *Eupithecia*, differed so much *inter se* that it was almost a hopeless task to follow.

With all this material to hand, it appeared to me that it should be fairly easy to decide what it really was, as I possessed all the British species, save *innotata*, *pernotata*, and *egenaria*; but in practice it was not so facile, the markings being so



obscured by its melanism. I was disposed to hold it a var. of *satyrata*, to which species it came very near to some of our southern forms; but when I showed my series at the South London, this idea did not find favour, and it occurred to me that the northern forms of *satyrata* varied in another direction. I was convinced of my error. One gentleman (Mr. Tutt) boldly stated it was only *virgaureata*, and that when they were first sent out by the Paisley collectors they were sent with typical *virgaureata*; but, finding they were wanted in the south, they now sent out only the selected melanic form. After this statement I wrote to Mr. Stewart for information. Asking him if they did get *virgaureata*, and if the insects sent to me were selected, Mr. Stewart replied as follows:—"I never heard of or took *Eupithecia virgaureata* here, and its food-plant, the golden-rod, I have only found once, and that many miles from where we take the "pug." I know the plant well, as I am tolerably well up in Botany, having a much finer collection of plants than insects. The specimens sent you were not selected, but just our usual form; when taken freshly emerged they are a beautiful glossy grey-black, some a trifle darker than others, but as a rule they vary very little. I doubt Mr. Tutt is making a mistake when he says he got typical *virgaureata* from Paisley; I have only five *virgaureata*, and they came from your side of the border."

Feeling perfectly convinced that it was in no way allied to *virgaureata*, I again most closely examined them, and at last got a key-note; and that is the hind marginal whitish line apparent in some of the specimens, and tolerably clear, but in others much obscured. When this line was contrasted to the same line in *E. castigata*, it was evident it was to this species that the Paisley "pug" belonged. I reset all to same model, for convenience of examination, and with a series of each, arranged in parallel columns of *satyrata*, the Paisley "pug," and *virgaureata*, it was clear that the puzzle was unravelled. The discoidal spot and the hind marginal very zigzag whitish line, when present, is distinctly shown on all the wings, both above and beneath; the neuration and contour of *castigata* and the Paisley insect are identical. That being so, I had no hesitation to re-exhibit them under their proper name at the South London Entomological Society on the 14th inst.

My friend Mr. C. G. Barrett was disposed to accept my determination, but wished an opportunity of a daylight examination, and to that end he had my series to take home; and I may now say that Mr. Barrett agrees with me absolutely that the Paisley insect is *Eupithecia castigata* var. I will not give it a varietal name, as, to my way of thinking, we have far too many named varieties already.

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

RED MARKINGS ON *PAPILIO MACHAON* AND *P. XUTHUS*.—With reference to Mr. Jenner Weir and Mr. Bowles' articles on the above subject (*vide* Entom. xxiv. pp. 105 and 130), I may mention that amongst 22 *P. machaon* and 16 *P. xuthus* in my Japanese collection, only one, *viz.*, a female of *P. machaon*, has any trace of red in the first submarginal lunule of the lower wing (upper side). Two of *P. xuthus* are without any traces of red, even in the seventh lunule at the anal angle; eleven show it but slightly, whereas in the remaining three almost the whole lunule is orange-red. Nine males of *P. machaon* show no trace of red in the sixth lunule, nine males and two females show it slightly, one female shows it very strongly, while in the remaining female the sixth lunule is almost entirely suffused with black. The less red there is in the anal angle lunule of the above-mentioned specimens of *P. xuthus*, the more the yellow in the fifth lunule is prolonged into the tail.—T. E. SANSOM; Yokohama.

PHÆISM OF JAVA BUTTERFLIES.—Mr. Jenner Weir (Entom. xxiv. 226) suggests that there may be some connection between the murkiness of the atmosphere in Java and the duskiness of butterflies from there compared with the same species from elsewhere. That, however, cannot be the reason, as, for climate and scenery, the mountainous interior of Java is probably unequalled in the tropical world. I believe, however, the dampness of the air may be the reason, and it would be interesting to see series of the same species taken on the coast plains, and at various elevations and distances from mountain summits. Near high mountains a heavy thunderstorm takes place almost every afternoon, whereas a few miles away there may not be a storm for several days, and of course the plains have regular dry seasons and (as this year) may be almost rainless for months. Doubtless most collections from Java have been made amongst the mountains, as far more species occur there than are found on the plains; but although the atmosphere up there is excessively damp, the greater part of the day is usually very bright and clear.—T. E. SANSOM; Yokohama.

ABERRATIONS OF *VANESSA ANTIOPA*.—Mr. South (Entom. xxii. 219) quotes Maynard's observations from 'Butterflies of New England' on *Vanessa antiopa* var. *hygiæa*, Heyd. Having in my possession two specimens of aberrations bred in 1888, by my nephew William Werner, of Biedenkopf, Germany, which differ from the above, it may be of interest if I give descriptions of them. In specimen No. 1 the yellow border on the primaries broadens out and extends near the tip to the second costal spot, which it absorbs, as well as the usual submarginal dark band and blue spots, with the exception of one, which is, however, absent on the left wing. The secondaries are normal. In specimen No. 2 the first costal spot on the primaries is entirely missing; but the border expands considerably at the tip, and includes the second costal spot; thence it descends, completely obliterating the dark band and blue spots on both wings, of which not a trace is visible. The yellow border in both specimens is thickly sprinkled with black dots, which form a smoky blackish patch on the angular extremity at the tip. The measurement in the centre of the border on either wings is fully three-eighths of an inch. The ground colour in both specimens is the ordinary rich brown. On the under side



the border of specimen No. 2 is decidedly narrower, white, and strongly suffused with black, a smoky streak passing through the middle, whilst the margin towards the inner side is very indistinctly defined.—J. JÄGER; 180, Kensington-park Road, Notting Hill, January, 1892.

GREEN AND BROWN-COLOURED PUPÆ OF *PAPILIO PODALIRIUS*.—I was sent last June a dozen eggs of *P. podalirius*, which I fed up during June and July on sloe. In July eight successfully turned into pupæ, four of which were of a light green colour, and four the ordinary light brown. The green ones all produced perfect specimens in August, but I still have the brown in pupæ. Is this always the case, or is it only a coincidence that the green should emerge and not the brown? — J. LEWIS BONHOTE; C/o Rev. W. D. Bushell, Harrow.

CURE FOR THE RAVAGES OF THE LARVA OF *N. RIBESII*.—Whilst paying a visit to a friend in Somerset last week, he informed me that he never remembered the larvæ of the sawfly, *N. ribesii*, so numerous as they were last season. In his garden they swarmed on both gooseberry and currant, completely stripping some of the bushes of their leaves. He found the following remedy so instantaneously effectual, that perhaps some of your readers may be glad to know of it:—1 tablespoonful of fir-tree oil in 1 gallon of water (same proportion as for aphids); syringe; the larva, on being touched with the liquid, falls, and almost instantly dies. — JOHN N. STILL; Seaton, Devon.

LARVÆ-BEATING IN EPPING FOREST.—During the past season of 1891, many kinds of larvæ were abundant throughout the Forest. Several species which are generally very scarce were fairly plentiful. On 4th July I beat out a larva of *Thecla betulae* near High Beach, from which I bred a fine female specimen on 11th August. This species has been taken freely in various parts of the Forest on sloe. The great feature of the year was the occurrence of *Stauropus fagi* in Monk Wood. On Sept. 5th I beat one from oak, and on the 12th of the same month I obtained two more, one from oak and the other from beech; at least a dozen other larvæ of this species were found in the same locality; and the fine beech trees in Monk Wood also yielded an unusually large number of *H. prasinana*, *D. coryli*, *D. pudibunda*, *E. linearia*, &c. Other kinds, such as *N. ziczac*, *N. camelina*, *D. furcula*, &c., were also freely distributed. Thus it is evident that the severe weather has in no way diminished the number of larvæ, but has probably destroyed many of the deadly parasites that prey upon them. Also it would appear that the entomological resources of Epping Forest are far from exhausted yet.—C. B. SMITH; 24, Rectory Road, Stoke Newington, N., January 1, 1892.

COLEOPHORA METALLICELLA, n.s.—For twenty years I have had a species of *Coleophora* under the name of *metallicella* in my cabinet, and have felt convinced all the time that it was quite distinct from either *C. nigricella* or *C. fuscadinella*. From both these species it differs in the following respects:—Firstly, it is of a bronzy lightish green colour; the scales are larger and more raised, and the insect has a more muscular appearance. In one sex the antennæ are white nearly half way down, and the tips are white in both sexes; but this is not a trustworthy character, as it is subject to variation. The larva occurs in May, and is nearly a month earlier than that of *C. fuscadinella*, which is not found till June. How I happened to

breed *C. metallicella* came about in this way. For a number of years I had noticed certain white blotches on the leaves of young birches, and these I considered to be merely the work of *C. fuscedinella* larvæ, and did not pay any attention to them until about two years ago, when I was beating for *Micropteryx*, *salopiella* and noticed a lot of *Coleophora* cases, which I did not know, sticking about my umbrella. I then examined the white blotches which I had formerly despised, and found a number of these strange cases, all full grown. I took a lot of these home and kept them, apart from everything else, and have bred from them thirteen fine specimens of *C. metallicella*. I sent these and the cases, also my series of *C. fuscedinella* bred from cases on alder, and all my *C. nigricella*, to Dr. Wood. *C. nigricella* was soon disposed of, but Dr. Wood wishes to make some anatomical examinations before he expresses a definite opinion with regard to the distinctness of the insect I call *C. metallicella* from *C. fuscedinella*.—J. B. HODGKINSON; Ashton-on-Ribble.

SUGARING IN OCTOBER.—During the greater portion of October last, two of us "sugared" each night in a large garden three miles from Arundel. Insects were plentiful, and on some evenings they swarmed at the "sugar," which consisted solely of treacle and rum. *Phlogophora meticulosa*, *Anchocelis pistacina*, and *Xanthia circellaris* were very abundant; I took a fine and variable series of *pistacina*. The rest of our captures consisted of *Leucania pallens* (4), *Orthosia macilenta* (25), *O. lota* (13), *Anchocelis litura* (9), *A. rufina* (4), *Cerastis vaccinii* and *spadicea* (many more of the former than the latter), *Scopelosoma satellitia* (30), *Xanthia fulvago* (3), *Xylina socia* (12), and *X. ornithopus* (a good series in fine condition), *Agriopsis aprilina* (2), *Plusia festuæ* (1 in excellent condition), and *P. gamma* (several), *Caradrina quadripunctata* (2), *Cidaria siterata* (1), and *C. immanata* (4), *Thera variata* (2), and *Eubolia cervinaria* (2 caught on the wing). We also managed to secure about 400 pupæ by digging during the day, among which are nearly 40 *Smerinthus tiliæ*. One pupa has produced the finest female *Asteroscopus sphinx* I ever saw. My experience is that "sugar" in October is nearly always a success, and ivy when out doubles the bag!—(Rev.) T. SEYMOUR ST. JOHN; Jan. 18, 1892.

NOTES FROM PLYMOUTH.—Though the weather during the past year has, on the whole, been most unfavourable to entomological pursuits, yet I think I have never found a better season for larvæ, which have been the chief objects of my search. The improvement on last year I imagine to be due to the severity of the winter; the frosts of the end of November, December, January, and the terrible blizzard of March 9th and 10th, serving the double purpose of securing the pupæ for the time being and killing off their enemies, the insectivorous birds. To pass from theory to fact: January I devoted to pupæ-hunting, taking eleven *Acronycta ligustri*, one *Eurymene dolobraria*, and three larvæ of *Arctia fuliginosa* hibernating among moss. February was remarkably fine, scarcely any rain falling throughout the month; I took a few more pupæ of *A. ligustri*, and found *Cheimatobia brumata* still on the wing on the 18th; *Larentia multistrigata* was common at the end of the month, and I took one or two *Xylocampa lithorhiza* at flowers of the red and white mezereon. I took *Hybernina progemma* on the 17th Feb., and again on May 12th; its emergence would seem to have been interrupted by the intervening snow-storm. Towards the end of March I again took *H. progemma*, and at the willows *Tanioscampa stabilis*. In April, at the willows, I took *T. stabilis*, *T. gothica* (very



common), *T. cruda* and *T. rubricosa* (fairly so), *Cerastis vaccinii* (one or two), *Xylina petrificata* (2), *Selenia illunaria* (a few), *T. gracilis* and *T. instabilis* (one of each), and last, but not least remarkable, *Pieris rapæ* (1). From willow catkins and shoots collected about this time I bred one *Xanthia cerago* and numbers of *X. silago*; also some *Orthosia lota* from spun-up willow leaves. On May 6th a full-fed larva of *Cossus ligniperda* was brought me, which had been dug up in a garden; it spun a cocoon of earth and bits of cork, and changed to a chrysalis. The same day *Notodonta chaonia* (pupa kept in cool porch) emerged; its hind wings had in them little distended sacs, which I opened with pin and blotting-paper. On the 9th I took *Tephrosia punctulata* in Bickleigh Vale, and the next day *Selenia illustraria* came to light. *Tephrosia crepuscularia*, *Cidaria suffumata*, *Anticlea badiata*, and other common Geometers occurred. On May 20th I beat two very young larvæ of *Pæcilocampa populi* (they are very dark when young), and on the 30th a larva of *Trichiura cratagi* from blackthorn. At the beginning of June I took seven *Euclidia glyphica* and one *E. mi* in a field with *Hesperia malvæ*; two larvæ of *P. populi* and of *T. cratagi* (one of them the variety with golden rings), and one of *P. cassinea*, were beaten on the 10th; and on the 12th another larva of *T. cratagi*, one of *Pericallia syringaria*, and two of *Diloba cæruleocephala* (a species rare with us). I found *Y. impluviata*, *T. crepuscularia*, and *T. punctulata* at rest. During the month I beat another larva each of *T. cratagi* and *P. populi*, one *Asphalia ridens* (?), and one *Thecla quercus*; the resemblance of this larva to an unexpanded oak-bud is most striking. I took two *Lithosia mesomella* among bracken fern, one *Numeria pulveraria*, and found the variable *Fidonia atomaria* common on the 20th. On the 27th I thrashed out a male *E. dolobraria* from a hedge. During July larvæ of *Dianthæcia carpophaga* were common locally, *D. cucubali* much scarcer, on the seeds of *Silene inflata*. On the 10th July *Triphæna fimbria* was brought me. I took also *Plusia chrysitis*, *Aplecta tincta* (1) by mothing in the evening, *Ellopiæ fasciaria* (at gas-lamp), and three or four larvæ of *Cucullia chamomillæ* on *Matricaria* about the middle of July. On Aug. 2nd I took a young larva of *Acronycta leporina* on birch, and single specimens on Aug. 10th, 14th, 27th, Sept. 2nd, 18th; out of these, I regret to say, only one survived, the others dying (perhaps from overcrowding). On Aug. 6th I beat a fine larva of *Notodonta trepida* (which went down a day or two later), and took a fine *Geometra papilionaria* in Bickleigh Vale. The same day I beat *Notodonta dodonea* (?) larva, and obtained others on Aug. 13th, 15th, Sept. 1st, 10th and 12th. On Aug. 7th I found *Plusia pulchrina* at rest on a birch-leaf, and *Cilix spinula* on seed-vessel of *Lychnis dioica*; on the 8th a fine larva of *Ennomos tiliaria* on birch; on the 6th, 8th, 29th, larvæ of *Platypteryx falcula* (the last on alder); on Sept. 7th and 8th, larvæ of *P. lacertula*. On Aug. 15th I took two *N. dictæa* larvæ, and one of *Diphthera orion*, and obtained others on the 22nd (two very young), Sept. 8th (2), 10th (4), 14th (1), 16th, 1); all were beaten except the last, which was found resting on the upper surface of an oak-leaf, with its head tucked in after the manner of *Acronycta rumicis*. The larvæ corresponded well with Newman's description, which seems to have been taken from a larva immediately after its last moult. On Aug. 21st I beat *Acronycta alni* in "bird-dirt" skin, and on Aug. 24th two more were taken; I beat another from alder on the 28th, and one from oak on Sept. 14th. On Aug. 26th I beat a young spider-like *Stauropus fagi* larva, and obtained two others on Aug. 28th,

Sept. 1st (3), 4th (1), 5th (1), 8th (1), 14th (4), 15th (1). On Sept. 1st I took *Agrotis suffusa*, and again on Oct. 19th and Nov. 7th. Half-a-dozen larvæ of *Thyatira batis* and three *T. derasa* were obtained from bramble; one of the latter I found resting in a slight web at the base of the three leaflets of a bramble-leaf; the rest were beaten. The following insects occurred at ivv:—*Agrotis suffusa* (2), *Noctua c-nigrum* (1), *Orthosia lota* (a few), *O. macilenta* (abundant), *Anchocelis rufina* (4), *A. pistacina* (common), *A. lunosa* (2), *Cerastis vaccinii* and *C. spadicea* (very common), *Scopelosoma satellitia* and *Oporina croceago* (a few of each), *Xanthia ferruginea* (fairly common), *Epunda nigra* (1 female), *Miselia oxyacanthæ* (not uncommon), *P. meticulosa* (abundant), *Xylina rhizolitha* (a few), *X. petrificata* (not uncommon), *Plusia chrysitis* (1), *P. gamma* (one or two). I took my first insects at ivv on Sept. 29th, my last about Nov. 21st. At gas-lamps I took one *Dasypolia templi* on Nov. 4th; two *Pæcilocampa populi* on Dec. 5th; four *Himera pennaria* on Nov. 16th, 17th and 30th; and one *Hybernica defoliaria* on Nov. 30th.—F. J. BRIGGS; Fursdon, Egg Buckland, December 28.

BRITISH ORTHOPTERA.—As I contemplate writing a popular handbook on the above, as a companion volume to my 'Illustrated Handbook of British Dragonflies,' I shall be very pleased to receive any information from those who are interested in them. Local lists and specimens for figuring would be very acceptable.—W. HARCOURT BATH; Ladywood, Birmingham.

EUPITHECIA PYGMÆATA.—Can any of your numerous readers give me any information as to the larva of this species, its food-plants (if more than one), the best time and best method of working for it, &c.?—A. E. HALL; Norbury, Sheffield, Dec., 1891.

THE NEW FOREST BILL, 1892.—In connection with the petitions in favour of this Bill, to which the signatures of persons interested in the New Forest are being obtained, I am frequently asked, "What is the necessity for the Bill, and what is its object?" The facts of the case may be shortly stated as follows;—The "Woods and Wastes" of the Forest comprise about 63,000 acres of land, the whole of which were, prior to 1698, open and unenclosed; but under the authority of the Acts 9 & 10 William III. c. 36 (1698), and 48 George III. c. 72 (1808), the Crown was empowered to enclose, and keep enclosed, freed and discharged from all rights of Common, such quantity of land in the Forest as would amount to 6000 acres, for the growth of timber. By the Act of 14 & 15 Vict. c. 76 (the Deer Removal Act of 1851) the Crown was authorized to enclose and plant with trees any quantity of land, not exceeding 10,000 acres, in addition to the 6000 acres already in enclosure under the authority of the Acts before mentioned. The powers conferred by these Acts are not repealed by 40 & 41 Vict. c. 121 (the "New Forest Act, 1877"); but the rights of enclosure are by Sec. 5 of the last cited Act limited to "Such lands as are at the date of the passing of this Act enclosed, or as have, previously to such date, been enclosed by virtue of commissions issued in pursuance of the said Acts or some of them." The New Forest Act of 1877 practically secured the New Forest to the public; but the Act is virtually repealed by the 10th Section of the Ranges Act, 1891 (and other Acts therein referred to), under the authority of which the War Department, with the consent of the Commissioners of Woods and Forests, can take



possession of any part of the Forest for military purposes, and exclude the public from the enjoyment of any tract so taken. Already it is proposed to take 800 acres for a rifle range and the site of a camp, and there is nothing to prevent the exercise of such rights throughout the district, and the conversion of the Forest into a second Aldershot. Wherever a portion of the Forest is taken, the rights of the commoners, if they complain, will be bought up and extinguished; and thus by taking different areas at different times the Commissioners may, before very long, extinguish the common rights and reduce the Forest into private ownership. It is clear that the proposed enclosure of 800 acres and the user of the Forest generally in the way described, is in direct violation of the spirit and intention, as well as of the express provisions, of the New Forest Act of 1877. The object, therefore, of the New Forest Bill, is to make it clear that the Forest shall not be deemed to be within the provisions of the 10th Section of the Ranges Act, 1891, and that the provisions of the New Forest Act, 1877, shall remain in force. The rights secured by the Act of 1877, and the preservation of the Forest as an open space, are of the greatest importance to naturalists, artists, and the general public, and every possible effort should be made to secure the passing of the Bill, by signing petitions in support of it.—H. Goss; Surbiton Hill.

ERRATUM. — Page 20, for *Macroglossa vox* read *Macroglossa nox* throughout the note.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*January 27th, 1892.*—Fifty-ninth Annual Meeting (adjourned from the 20th inst. on account of the death of H.R.H. the Duke of Clarence), Mr. F. DuCane Godman, F.R.S., President, in the chair. An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892:—President, Mr. Frederick DuCane Godman, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G. Barrett, Mr. Herbert Druce, F.L.S., Captain Henry J. Elwes, F.L.S., Prof. Raphael Meldola, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Captain Elwes, Dr. Sharp, and Lord Walsingham, Vice-Presidents for the Session 1892—3. The President then delivered an Address. After alluding to the vast number of species of insects and to the recent calculations of Dr. Sharp and Lord Walsingham as to the probable number of them as yet undescribed, he referred to the difficulty experienced in preparing a monograph of the fauna of even a comparatively small part of the world, *e.g.*, Mexico and Central America, and certain small islands in the West Indian Archipelago, upon which he, with a large number of competent assistants, had been engaged for many years. The examination of the collections recently

made in St. Vincent, alone, had obliged him to search the whole of Europe and North America for specialists; and similar collections from Grenada were still untouched in consequence of the number of workers being unequal to the demands upon their time. He observed that the extent of the subject of Entomology was so vast that nothing but a systematic and continuous effort to amass collections, work them out, and preserve them, could place us in a position to proceed safely with the larger questions which followed the initial step of naming species; and it would only be by the steady effort of our Museum officials, not only to work at the subject themselves, but to enlist the aid of every available outside worker, that substantial progress could be made. The President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Mons. Edmond André, the Duke of Devonshire, Mr. F. Grut, Mr. E. W. Janson, Prof. Felipe Poey, Sir William Macleay, Mr. W. H. Edwards, Mr. Robert Gillo, and Dr. J. M. J. Af Tengström. A vote of thanks to the President and other Officers of the Society having been passed, Mr. Godman, Mr. McLachlan, Mr. H. Goss, and Mr. Champion replied, and the proceedings terminated.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—  
*Jan. 14, 1892.* Mr. W. H. Tugwell, President, in the chair. Mr. A. Harrison, F.C.S., F.R.M.S., was elected a member. Mr. R. Adkin exhibited *Sesia ichneumoniformis*, Fb. Mr. Tugwell remarked that the larvæ were supposed to feed on *Lotus corniculatus*. Mr. Weir said it used to occur at Charlton, and he thought there was no *L. corniculatus* in that particular locality. Mr. Jäger exhibited two examples of *Vanessa antiopa*, L., bred by Mr. Werner, of Biedenkopf, Germany: in one the dark band and the blue spots on the primaries were obliterated; in the other the yellow border was considerably widened, and entirely absorbed the dark band and blue spots, as well as the two costal spots; the border was also much diffused with black. Mr. Weir remarked on this species occurring so far north as Hudson's Bay. Mr. C. Fenn showed *Agrotis tritici*, L., grey and dark forms from Deal, and dark forms from the North of Scotland and Sligo. Mr. Tugwell again exhibited the black specimens of the *Eupithecia* from Paisley, with typical examples of *E. virgaureata*, Dbl., and *E. castigata*, Hb., and remarked that he had been in communication with a correspondent at Paisley who informed him that *virgaureata* did not occur in that district, and the food-plant was exceedingly rare; he had had the pupæ sent him, and it did not accord with Harpur Crewe's description of the pupæ of *virgaureata*; and on carefully comparing the black specimens with the *Eupithecia* in his collection, Mr. Tugwell said he was quite sure that it was not, as he first supposed, a black form of *E. satyrata*, nor, as Mr. Tutt suggested, of *E. virgaureata*, but was undoubtedly referable to *E. castigata*. Mr. Tutt said he was still of opinion that the species was *virgaureata*, which he had on many occasions received from Paisley; he exhibited typical, intermediate, and black forms of *virgaureata* from Paisley; also *E. albipunctata*, Haw., and var. *angelicata*, Bar. Mr. C. G. Barrett said that, on first seeing these black specimens, he thought they were *trisignaria*, H.-S., but he was inclined to think that Mr. Tugwell was right in referring them to *castigata*. Mr. Barrett added that at Cannock Chase he had taken specimens of *castigata* quite as black as those



under discussion. Mr. Tugwell said he thought Mr. Tutt's specimens were *castigata*, and not *virgaureata*, but Mr. Barrett said four of them were certainly the latter species. On Thursday, Feb. 11th, Mr. H. Wallis Kew, will deliver a lecture entitled "The Dawn of Memory in the Animal Kingdom."—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The annual meeting of this Society was held in the class-room of the Free Public Library, William Brown Street, where, although the weather militated against a large attendance, a most enjoyable evening was spent. The President, Mr. S. J. Capper, occupied the chair, and in the course of his annual address referred to the entomological records of the past year, and also gave a series of most interesting personal reminiscences of his experience as an entomologist for over fifty years. This began at an Epping school, where Henry Doubleday did so much work, and helped the school-boys by naming and describing their captures. The President spoke of the progress of the Science since his first acquaintance with it, and the improvements in the mode of capturing and preserving specimens. He referred also to the inauguration of the Lancashire and Cheshire Society, the first meeting of which was held at his house at Huyton, in March, 1877. He further enumerated the principal achievements of the past Session, which, he said, had been at least equal in good work to any previous Session. In conclusion, he remarked that it was to the younger members that they now looked for the further progress of the Society. Mr. Capper was re-elected President; and the Rev. H. H. Higgins, Vice-President. Mr. F. N. Pierce (Hon. Secretary) and Mr. C. H. Walker (Hon. Librarian) were re-elected; the new members of the Committee being Mr. George Harker and Mr. C. E. Stott. During the evening the following specimens were exhibited by the members named:—Varieties of British Lepidoptera, the President; varieties of *Eupithecia venosata*, Mr. C. S. Gregson; life history of the bot fly, *Gastrophilus equi*, Mr. R. Newstead; *Phycis splendidella*, captured at Wallasey, July, 1891, Mr. H. B. Jones; a fine web formed by the larvæ of *Ephestia elutella*, Dr. J. W. Ellis; and Scotch *Dasydia olfuscaria*, *Noctua sobrina*, &c., Mr. C. E. Stott.—F. N. PIERCE, *Hon. Sec.*; 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—Dec. 21, 1891.—Rev. C. F. Thornewill, V.P., in the chair. Mr. P. W. Abbott showed *Agrotis obelisca*, taken by Mr. A. J. Hodges in the Isle of Wight; also a specimen of *Noctua c-nigrum*, with which species Mr. Hodges says *obelisca* is often confounded on the sugar. Mr. R. C. Bradley showed *Pyrellia lasiophthalmia* from Sutton. Mr. Abbott read a paper on "A Holiday, collecting in the Isle of Wight." He worked specially for *Agrotis lunigera*, with considerable success; but such was the danger of collecting on the cliff, where alone they are to be taken, that he advised others to leave it alone. He took many other good things, the method of capture of which he described, and the paper was illustrated by the specimens themselves.

Jan. 11, 1892.—Mr. W. G. Blatch, President, in the chair. Mr. R. C. Bradley showed some Diptera, which had been shown at a former meeting as *Pteropæcila lamed*, with the note that they had been confirmed as that species by Mr. Verrall. They had since, at his request, been again submitted to Mr. Verrall, and he names them as *Toxoneura muliebris*, with the remark that *lamed* is not yet recorded as British satisfactorily. A letter was read from Mr. C. J. Fryer recording *Stenamma westwoodii* from

Warwick. Mr. C. J. Wainwright read a paper on "A Holiday spent in North Cornwall last year," in which he described the results of a fortnight's collecting on the North Coast, during which he took *Plusia orichalcea* and many good Diptera. The paper was illustrated by photographs and the collections made.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL CLUB.—A meeting was held at the Holborn Restaurant, Dec. 11th, 1891. Mr. G. H. Verrall, F.E.S., in the chair. Dr. Philip Brook Mason, F.L.S., was elected an Ordinary Member. Mr. Richard South was elected an Honorary Member, and subsequently Secretary, in place of the late Mr. F. Grut. Among the exhibits were a fine series of *Lycæna arion*, by Mr. E. A. Waterhouse, who observed that the species appeared to be common in Cornwall, where he captured the specimens exhibited; also some interesting Diptera, by Rev. E. N. Bloomfield, Mr. Wainwright, and others. After the meeting the members, and some thirty-four visitors, adjourned to the supper-room, where they were most hospitably entertained by the Chairman.—RICHARD SOUTH, *Hon. Sec.*

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### REVIEWS.

*Delagoa Bay: its Natives and Natural History.* By ROSE MONTEIRO. Pp. 274; 20 illustrations, 8vo. London: George Philip & Son, 32, Fleet Street. 1891.

THE authoress introduces her book as a medley of "everything in general and nothing in particular"; but we find that very many matters of considerable interest are treated of; and we are sure that the public in general, and entomologists in particular, will be delighted to read this charming volume. The chapters devoted to a consideration of the Natural History of Delagoa Bay, not only show that the writer is an ardent lover of nature, but that she is also an observant student of the habits and transformations of insects. Referring to the rearing of caterpillars, the writer says (p. 194), "I must confess I get quite fond of some of my prettiest ones, and miss them when they have retired to the pupa stage, especially when I have had them under my care for some time. They vary so much, too, in their habits, and even their tempers, that they are most interesting and amusing." The larvæ of many species of Lepidoptera, some new to science, are briefly described, and several butterflies new to the African fauna are figured.

*Journal of the Institute of Jamaica.* Vol. I., No. 1. Kingston, Jamaica. November, 1891.

A Quarterly Journal devoted to Literature, Science and Art; its object being to further extend the influence of the Institute of which it is the official organ. The present number contains, among other papers, one by Mr. T. D. A. Cockerell, Curator of the Museum, entitled "Notes on the Transformations of some Jamaica Lepidoptera."

*A List of the Macro-Lepidoptera of Balerno, Midlothian.* By E. W. CARLIER, M.D., B.Sc.

This is a reprint from 'The Annals of Scottish Natural History,' January, 1892. The list is not a long one, as only 109 species are enumerated, but this is due to the limited area worked, and that usually Saturday afternoons only were available for collecting.



*Diptera of West Cornwall.* By C. W. DALE, F.E.S.

About 400 species are enumerated in this list, which commences with the too familiar *Pulex irritans* and ends with a member of the Hippoboscidae, *Melophagus ovinus*. Reprinted from the 'Transactions of the Penzance Natural History and Antiquarian Society,' 1890-91.

*Catalogue Raisonné of Silk-producing Lepidoptera.* By ALFRED WAILLY.  
Pp. 35, 8vo.

In his opening remarks the author refers to those species of exotic silkworms which can be most successfully reared in the open air in Europe; he then refers to the various contagious diseases to which the larvæ are subject; and concludes by pointing out how silkworms can, for commercial purposes, be best reared in their native country. In the Catalogue itself the species of silk-producing Bombyces are considered under the heading of the particular Continent to which they respectively belong. This little book should be useful to all who are interested in sericulture.

*An Elementary Manual of New Zealand Entomology.* By G. V. HUDSON, F.E.S. Demy 8vo, pp. 128, and 21 col. plates. London: West, Newman & Co. 1892.

A popular introduction to the study of the Insect Fauna of New Zealand; the author's chief purpose being to induce his readers to take an active interest in the investigation of insect life in the country of which he treats. With this object in view, remarks of an elementary character are made on classification, and the best methods of collecting insects considered. Certain species in most of the families of each Order are referred to, and the habits of the perfect insects and their earlier stages discussed in a manner that should arrest the attention of those for whose especial instruction and guidance the work has been undertaken. No scientific descriptions are given, but the insects, and in most cases their respective larvæ and pupæ, are figured. The chromo plates by West, Newman & Co. are excellent reproductions of the original drawings by the author, and these largely add to the general value of the book. To everyone interested in the Entomology of New Zealand we can heartily commend this useful book.

*Transactions of the City of London Entomological and Natural History Society.* 1891. 8vo, pp. 38. Published by the Society, 33, Finsbury Square, E.C.

Under the above title, this Society has issued a reprint of the reports of its bi-monthly meetings previously published in the 'Record,' &c. A figure of an interesting aberration of *A. aglaia* is given, but this also has been published before. There is a paper on "The Genus *Donacia*," by Mr. G. A. Lewcock. No information as to the present condition and financial position of the Society appears, but possibly it was not considered "the thing" to mix up such matters with the 'Transactions.' We wish this modest little volume every success, and hope that it will be the means of attracting more workers to the Society from which it emanates.

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## EPHESTIA KUHNIELLA.

BY R. ADKIN, F.E.S.

SINCE this species was first recorded as occurring in this country, now just five years ago, and its subsequent detection in large numbers in imported flour in one of the East London warehouses, it appears to have received but little attention, so far as published records are concerned; it has nevertheless been steadily establishing itself, and, although we have no case of damage caused by its agency to parallel one recently reported from America, where the larvæ are said to have appeared in such multitudes as to necessitate the stoppage of a large mill for several days in order to clear the machinery of the tangled mass of webs from their workings, it is of sufficiently frequent occurrence in granaries, mills, bakehouses, &c., to warrant its being classed among our established insect-pests. Probably there are few such places that are altogether free from its attacks, and even samples in a London merchant's office have fallen victims to its ravages. The larvæ have been found most commonly on beams, window-ledges, and similar situations, where the dust from flour, rice, grain, &c., is allowed to accumulate, and probably find their way thence into the bulk of the flour, their presence being detected by the improved cleaning machines now in use in the larger bakeries, and the imagines are to be seen only too often resting on walls, &c. For some years past I have had sundry broods under observation, and have been much struck by the privations through which the larva will pass without any apparent detrimental effect. In the early months of last year I started a fresh colony by placing a number of well-grown larvæ in a large glass jar, with some wheat-flour for food, and pieces of rag for them to pupate in. They soon fed up; imagines appeared and deposited ova, from which larvæ resulted in large numbers; brood succeeded brood, and for many months past there has been a liberal supply of larvæ in all stages, together with pupæ, and imagines always present. Fresh flour was added from time to time, until August



last, when, on leaving home, the jar was put aside and overlooked for some three months. When it again came under observation the whole of the flour had been passed through the larvæ; no fresh flour has since been added, but the larvæ have thriven on the frass and dead bodies of their progenitors, which they consume with avidity. Imagines still continue to emerge, and the larvæ now feeding appear to be quite healthy, but the quantity of frass remaining is greatly reduced in bulk, and darkened in colour.

In another case, wishing to examine the egg microscopically, I placed a moth in a small glass-topped pill-box, with a few grains of rice; after a few days a careful search revealed three most uninteresting looking ova attached to one of the grains. After examination they were allowed to remain in the box, and shortly a larva was found to be feeding. After a time the second egg hatched, and ultimately the third. Two of the larvæ have already fed up in this small box, and produced imagines, which, on dying, were promptly devoured by the remaining larva, which, despite its imprisonment for so long a time, is now quite healthy and growing steadily.

The larvæ that I have had under observation have throughout fed, by preference, in confined spaces,—for instance, between the pieces of rag before mentioned and the sides of the jar,—rather than in the midst of the food, which habit suggests that, under natural conditions, the spaces between floor-boards, disused sacks, round skirtings, and similar situations in flour mills, &c., as well as the beams, &c., already referred to, would form suitable breeding grounds for the species, and in such it would be likely to multiply to a dangerous extent without being noticed; but, except under such conditions, I am not apprehensive of its occurrence in such numbers as to do any great amount of mischief. Although it is improbable that a pest of this description, once established, is likely to be altogether exterminated, there can be little doubt that if places likely to afford harbour are frequently cleansed of accumulated dust, the chief source of danger of any large outbreak will be removed.

Lewisham, February, 1892.

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## ENTOMOLOGICAL PINS.

By DR. D. SHARP, F.R.S., &c.

In his note on this subject in the September number of the 'Entomologist' (xxiv. 215), Mr. South has called attention to a matter of great practical importance. Everyone who has been for many years, or even a few years, much occupied in dealing with entomological specimens must have had frequent occasion to regret the loss of valuable examples due to the corrosion of

pins. Entomological pins are, in fact, extremely unsettled in their characters. I have had insects, nearly a hundred years old, that have been transferred again and again, and yet the pins they are transfixed with appear to be in perfectly good condition, and capable of standing wear and tear for another century or two. On the other hand, specimens only a few years old are frequently lost either by the insect splitting asunder from the development of verdigris, or from the pin breaking in two from corrosion.

This uncertainty arises, I believe, from two different sources, *viz.*, differences in the pin-metal, and differences in the substances in which the pin is placed. This last source of evil is also of a double nature, the corrosion being sometimes due to the nature of the substances in the interior of the insect, and sometimes to the articles with which the box is lined, *viz.*, the paper, the matter with which the paper is fastened to the bottom, and the substance, cork or other material, forming the bottom of the box. To these various sources of deterioration of pins must be added the atmosphere of the apartments in which collections are kept; it being according to my experience an undoubted fact that in a damp atmosphere pins decay much more rapidly than in a dry one.

My attention was attracted to this subject twenty years or more ago. I have since then made some observations and experiments bearing on the subject, and I have come to the conclusion that all insects of small size intended for permanent preservation should either be enclosed in cells, or fastened by a gum to card, or pierced with a silver-wire instead of a pin, the silver-wire being afterwards placed on a block carried by a thick strong pin.

I have been in the habit of making my silver-wire pins myself; but this was always difficult and unsatisfactory, and cost me a great deal of time. And I am accordingly glad to announce that Messrs. Watkins & Doncaster have succeeded in getting made a series of wire pins, of suitable sizes for small insects, from pure silver-wire, and that can be retailed at the moderate price of 6/- or 7/- per 1000. The sizes and thicknesses I suggested to them are: 1, 10 mm. long, and as fine as the *minutien-nadeln* made in Vienna, that is, much finer than Kirby & Beard's No. 19 pin; 2, 12 mm. long, thickness of Kirby & Beard's No. 19 pin; 3, 14 mm. long, the thickness of Kirby & Beard's No. 15 pin; 4, 15 mm. long, thickness of Kirby & Beard's No. 10 pin. These silver-wire pins, as supplied by Messrs. Watkins & Doncaster, are quite satisfactory, and from my experience of fifteen years or more I strongly recommend entomologists to use them, though a guarantee as to the pins being made of pure silver-wire must be understood to be necessary.

The pin recommended by Mr. South is, I understand, made



of iron or steel,\* but I cannot myself advise the use, for *pinning through an insect*, of a pin made of this metal; it being my experience that this metal is subject to decay in the interior of the insect, so that the pin frequently, though looking perfectly sound, breaks in two in the interior of the insect.

In connection with this it must be recollected that the interior of an insect is liable to contain various acids according to the nature of the species, the maturity of the specimen, and the way in which it has been killed and dried.

As yet I have never lost a specimen pinned with the silver-wires of my own manufacture. The wire soon loses its bright white appearance, tarnishes and becomes even quite black, but I have seen no reason to suppose that this change extends into the interior of the pin, nor have I found that the wire is at all affected by acids in the interior of the insect: certainly there has never been a trace of verdigris.

It is generally supposed that silver-wire is too flexible to be used for such a purpose. This is due to the fact that the wire usually used in arts is annealed. The unannealed wire, on the contrary, is quite rigid enough for entomological purposes. It does not, however, take so perfect a point as steel does, and when insects are pinned at home with it, I recommend that a very minute prick should first be made with the point of a bead-needle at the spot in which the insect is to be pinned with the wire; one of the wires should then be taken between the ends of a pair of delicate pinning forceps and passed through the insect, starting at the minute prick previously made. If the insect to be impaled is large enough to be held between the finger and thumb of the left hand this should be done, and the impaling wire should be put in with a screwing motion; by this means the risk of rupturing or splitting the undersurface as the point of the pin emerges is very much reduced. If the insect be not large enough to be held in the fingers, it should be placed on a piece of velvet or soft cloth, which assists both in steadying it, and in supporting the undersurface when pressed on by the emerging point.

After the insect has been impaled it should be pinned on a block composed of a surface of card with cork or pith underneath the card so that the cork or pith is not seen. The neatness of the appearance of such insects in a collection depends chiefly on these blocks. A system of symmetrical sizes should be used, and after many years' trial I can recommend the following sizes for the blocks as suitable, *viz.*, No. 2,  $12\frac{1}{2}$  by  $8\frac{3}{4}$  mm.; No. 3,  $17\frac{1}{2}$  by  $12\frac{1}{2}$  mm.; No. 4, 25 by  $17\frac{1}{2}$  mm.; No. 5, 35 by 25 mm. Each of these sizes is double of the one that preceded it, and in each the length is to the breadth as 7 is to 5. The locality and date should be written on the card forming the upper surface of

\* Steel, black-enamelled.—R. S.

the block (with liquid Indian ink so as not to be liable to fade), and this should be pinned through with a very strong pin: for this purpose I myself prefer for No. 2 block, Kirby & Beard's No. 2 pin, and for the larger blocks a No. 12 Continental pin 37 mm. long.

If the same sizes of cards be used for gummed specimens, it will be found that a series may be made up partly of gummed and partly of silver-wired specimens and yet retain a symmetrical appearance.

Cambridge, Feb. 9, 1892.

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### ARCTIA CAIA.

By J. ARKLE.

In the summer of 1890 I began a series of experiments in breeding *Arctia caia*, of which, although possessing little, if any, scientific value, it may be interesting to give a detailed account. My chief object was to obtain so-called "varieties" by interbreeding, and although much might be made of some of the forms I bred, still I am bound to confess they are, in my opinion, only slight departures from the usual type,—a small reward for all my trouble.

Discouraging as this preliminary summing-up may be, still as my operations did not end until July, 1891, during the whole of which period the various phases of the insect were under constant and close observation, matters of extreme interest often arose.

The eggs I found laid, in the wild state, upon the leaves of plants and trees,—once upon sallow, and once upon the leaf of a young lime tree. To the naked eye they appear pale, globular, and yellowish, and about the size of an ordinary pin's head. They are laid in straight rows touching each other, and it is curious to observe how the parent moth will proceed for an inch in a straight line, and then turn off at an obtuse angle. The whole of the eggs form, as a rule, a closely laid batch. Under a strong magnifying glass, and viewed separately, the egg appears to be smooth, of a greenish colour, with a bronze-yellow lustre, changing first to chocolate and then to dark plum-colour before hatching. A powerful microscope shows a minute, apical zone, from which radiate lozenge-shaped "scales" pointed at each end, and resembling miniature Zulu shields. This radiation is regular, after which the "scales"—minute, but very equal in size—are irregularly distributed over the whole of the shell as if marked out by a finely pointed needle. They reflect the most beautiful mother-of-pearl tints,—rose-pink, purple, green and blue.

The caterpillar I pass over, and for two reasons.—First, it is so thoroughly well known as to need no description;



secondly, the closest observation, on my part, failed to detect the slightest difference among the hundreds of larvæ which, at one time or other, have passed through my hands, with this single exception, that in frequent specimens, the silvery tubercles along the sides were much whiter than in others.

Kirby says *A. caia* is "common throughout Europe in July and August, except in the extreme south;" and that "the North American *A. americana* does not appear to differ from *A. caia* by any constant characters." He also adds, "Many varieties may be obtained by rearing larvæ on plants placed in salt water; and specimens reared from larvæ which have been fed on walnut leaves are unusually dark." According to Stainton, Kirby, Morris, Newman, and Wood, the upper wings are brown, or rich velvety brown with cream markings. Newman says, "It is impossible to describe them." If, however, cream be taken as the ground colour, it will be seen that the brown marks or blotches are symmetrical, and that the wing is, therefore, by no means difficult to describe. First, there is a minute, narrow, basal mark close to the thorax. Secondly, seated on the costal margin are three blotches; the first, counting from the base, is small and rectangular; the second, which is by far the most prominent mark on the insect, spans the central portion of the margin by three irregular lobes, and stretches beyond the middle of the wing; the third blotch is a single but conspicuous lobe, stretching nearly halfway across the wing and deeply indented on the side nearest the outer margin. Thirdly, on the outer margin a blotch is seated on nearly its entire length. It consists of two broad, irregular lobes, the uppermost of which occupies the tip of the wing. We have now reached the inner angle, at which there is a small, wedge-shaped blotch or dot. Fourthly, on the inner margin are three blotches, stretching into the wing and nearly meeting the corresponding blotches on the costal margin; the third is the largest, and, like the costal blotch above it, is deeply indented on the side nearest the outer margin; the second is smaller and rectangular; the first is narrow and inconspicuous. Two small, pear-shaped, basal marks, complete the ornamentation of the upper wing.

The lower wings are "reddish orange," with two parallel rows of blue-black, circular, lustrous spots, each surrounded by a band of velvety black. The first row (nearest the base) consists of two spots of unequal size, the largest being nearest the anterior margin. The second row has four spots; the fourth, which is inconspicuous, is seated on the anterior margin and frequently joined to the third spot. Between these rows, and near the anterior margin, is an irregular and smaller black spot.

The antennæ are smoky white; the thorax brown; the body red, on the segments of which are six black bars.

The insect with the central blotch on the costal margin *three-*

*lobed*, appears to be the accepted type of Kirby. Morris, Newman, and Wood figure this blotch with two lobes, Stainton does not figure the moth. Which, then, is the type or commonest form of the insect? Is it the *tri-lobed*, the *bi-lobed*, or the *mono-lobed*? In both wild and bred examples I have found the three forms to occur, in abundance, according to the order I place them; and, in large series, an arrangement on this principle appears to be very satisfactory. It would be interesting if entomologists from different localities would record in the columns of the 'Entomologist' the results of their observation on these three commoner forms. For instance, I find out of twelve specimens (six males and six females) in a local collection before me, eleven have the mid-costal blotch tri-lobed, while, in the remaining example (a female) the blotch is bi-lobed. I also find, as a rule, that where this blotch is three-lobed, the specimens are light in coloration; that is, there is a greater area of cream-colour and less of the black; that the two-lobed specimens are darker; and that, where the blotch is a single lobe, or filled up as it were, the specimens are darkest of all, the cream-colour being all but obliterated, and the black spots on the lower wings so completely joined as to form two irregular, parallel bars. In this form of the insect, the spot near the anterior margin is often joined to the second bar. To these three recurring forms there will be, of course, occasional "varieties" and from the same batch of eggs; but the only example I recollect, is one in which the mid-costal blotch on the right wing is two-lobed (a female), while that on the left wing is three-lobed.

In June and July, 1890, I collected a number of larvæ in the Chester district which were nearly full-fed. These appeared as perfect insects about the middle of July. A few had the mid-costal blotch bi-lobed, but the majority were what I am disposed to regard as the type, or tri-lobed. These I will designate the *First brood*. After selecting a pair of fine, typical specimens, I obtained eggs July 18th. The eggs hatched August 4th, giving me a *Second brood*. This second brood began to appear as imagines, Sept. 21st, from which I obtained a *Third brood* of caterpillars on the 2nd of October. Generally speaking, I shall note the fortunes, or misfortunes, of the second and third broods separately, using the letter B as a reference to *both* broods. I kept the larvæ in flower-pots, placed on a warm kitchen shelf, with plenty of light from an adjacent window, and used dock and stinging nettle, as long as they were obtainable, as food.

*Second brood*.—Aug. 4th: hatched. Aug. 29th: cold, rainy, moonlight, since the 20th; eleven nearly fit for pupating; the rest nearly all moulting for the second time. Sept. 5th: five larvæ began to spin up; the backward ones have just moulted for the second time; about a dozen are in their third skins and



more advanced. Sept. 6th: temperature on shelf, 10 p.m., 78° Fah. (76° = summer heat, 55° = temperate); breeze, N.W. Sept. 8th: morning—previous to a fire being made—thermometer 72°. Sept. 9th: six or seven larvæ had pupated; hot, last three days. Sept. 21st: the first moth appeared, a typical male. Sept. 24th: another, a female type. Sept. 25th: another ordinary female. Eggs laid by first female placed, half of them in the kitchen, the rest out of doors. Sept. 30th: nine had emerged up to date, all ordinary types. These were let go out of doors, and many were brought back to me from various parts of the city as curiosities of the season! Nov. 3rd: another ordinary insect appeared. Nov. 13th: pupæ coming out slowly; put a dozen into the forcing-glass, and left the apparatus inside the kitchen fender. Nov. 15th: A fine, dark, two-lobed "variety" appeared. Nov. 19th: thermometer on shelf 76°. A few days ago, in late October and beginning of November, it stood at 70°; and a few times, in cold weather, at 68°. Nov. 21st: another ordinary moth. The larvæ show two or three deaths per day, while others are pupating. Still feeding on nettle. Some are yet in their second skins. Nov. 23rd: Another type; cold; rain; wind N.W. Nov. 24th: larvæ I find dying,—some when ready to spin up, some in earlier stages, others after making their cocoons and without changing into the chrysalis; cold weather; wind N.W., with showers of rain and hail. Nov. 25th: (B) first winter day; N.E.; hard frost at night; therm. 72° on shelf; many larvæ dying, especially of the second brood. Nov. 26th: intense frost; ther. 7 a.m., 55° for the larvæ; 11 p.m. 70°. Nov. 27th: (B) intense frost; larvæ dying in half-dozens; food (nettle) difficult to get—dock gone. Nov. 29th: (B) intense frost. One of the second and one of the third brood spinning up. Dec. 13th: (B) larvæ dying; they refuse to eat, and shrink in size. Dec. 15th: (B) the most severe weather for the last ten years. Larvæ, I am advised by Dr. Chapman, of Hereford, to feed on cabbage, and they eat it. All other food-plants gone. The larvæ shrivel up,—those spinning not forming chrysalids. Dec. 19th: (B) fall of snow, afterwards severe frost. I feed the larvæ now on lettuce from the market, as an experiment, at a cost of a halfpenny per day. They still diminish in numbers. Jan. 3rd, 1891: (B) complete thaw. I have now only about twenty larvæ left. Jan. 6th: (B) intense frost; ther. only 58° at 11.30 p.m.; larvæ dying fast. I gave up lettuce and returned to cabbage—lettuce deficient in nutriment; 15° of frost common. Jan. 8th: intense frost continued. 'Liverpool Echo' described it as "The Great Cold," and reports people frozen to death. According to 'The Standard,' there is only one recorded December temperature lower than that of 1890,—that of 1788. In 1788 the mean temperature was 29°; that of 1890, 30°.4. Jan. 12th: a fine, dark female

emerged—two-lobed, a very beautiful and richly marked specimen. On the lower wings the black spots, which are unusually large, are confluent in each line. Jan. 19th: this female, after pairing with an equally fine third-brood male (see Jan. 10th), laid a large batch of eggs. *All proved infertile.* Hard frost again. Feb. 3rd: (B) only eleven larvæ living, Feb. 20th: only two left, in their third skins, and evidently hibernating. Very cold, frosty; S.E.; ther. 62°, 11 p.m. Feb. 27th: one of the two larvæ died. March 15th: (B) the intensely cold N.E. breeze changed to a cold S.W. wind with rain. Larvæ still hibernating, March 18th: the last second-brood larva died!

*Third brood.*—Oct. 2nd: hatched. Oct. 11th: changed their first skins; beautiful weather; warm. Oct. 15th and 16th: changed their second skins; storms of wind and rain from the N.W.; cold. Oct. 18th: eggs (see Sept. 25th) put out of doors, hatched. Oct. 22nd: indoor larvæ changed their third skins. Nov. 2nd: changed their fourth skins. Nov. 11th: changed their fifth skins; cold weather. Nov. 14th: the larvæ out of doors (see Sept. 25th) are still in their first skins. They eat a little. They all died just before Christmas. (I have frequently tried to bring larvæ of *A. caia*, *A. villica*, and *A. fuliginosa* through the winter, out of doors, and have always failed). Nov. 30th: frost broke up; thaw from the N.W. The third brood are nearly all full grown. They have done well, so far, and look healthy, excepting a few deaths chiefly during the severe weather. Dec. 3rd: they begin to pupate. Jan. 2nd: one pupated; bitterly cold again. Jan. 10th: a mono-lobed male—the darkest “variety” yet—emerged; upper wings almost covered by the chocolate blotches. On the lower wings the two rows of black spots are simply a couple of black but irregular bands. This specimen paired with the second-brood female which appeared Jan. 12th. Ther. 62° at 9 p.m.; frost only 3° last night; skated again to-day. Jan. 20th: complete thaw; rain; S.W.; slight frost at night. An exceedingly small, two-lobed female appeared. Jan. 21st: hard frost. A larva pupated without spinning a cocoon. Jan. 27th: a crippled, two-lobed female. Jan. 28th: another female—a fine type specimen. Feb. 6th: half a dozen cocoons, on being opened, proved that the larvæ had died without pupating. Feb. 12th: a larva pupated. Feb. 20th: only eight larvæ left of the third brood, seven in their third skins evidently hibernating, and one ready to pupate. March 2nd: commenced to “harden off” the remainder by placing the pot at a warm south window. They are, in size and appearance, exactly like hibernated larvæ. They move about a little, but do not eat. Young spring nettles are available, and I use them. March 9th: still hibernating. A hard frost. The specimen referred to on Feb. 12th emerged,—a very commonplace, typical female, except that the fore wings appear as if



dusted with glassy scales. These give the insect a rubbed or worn appearance, and are, I think, evidence of disease. March 18th: I have now six larvæ left of the third brood. They still hibernate. Cold; N.E. Mar. 31st: the coldest, most wintry March I remember. Five larvæ left, hibernating. April 20th: one changed its skin; cold. April 25th: out of doors I came across a larva feeding on dead-nettle. July 16th: the two last died (third brood),—one after spinning up,—the other in its fourth stage!

Such was my experience. I was not very successful with the forcing-glass. Many of the pupæ I put in died just before emergence; probably because they were not kept moist enough. But I easily made out the insects to be typical, except in two instances, where they were bi-lobed. The apparatus consisted of a flowerpot-saucer full of coarse, gritty sand. A layer of moss was next placed on the top. Then came the pupæ on the moss. A twig was stuck through for the moths to climb up and develop their wings. Lastly, a bell-glass, fitting just inside the saucer-rim, concentrated the heat and moisture. The sand should always be kept wet by the addition of warm water when necessary.

It will be seen that all my "varieties" pale before the extraordinary form bred by Mr. Laddiman, and figured in the 'Entomologist' for January last. Still, my experiments were, to me, most interesting. An exceptionally severe winter was dead against them; but, if they save entomologists the trouble of undertaking this kind of work, in the hope of obtaining striking varieties, they will, on that score, have served some useful purpose.

Chester, January 4, 1892.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 14.)

### *Tarache monilifera*.

♂ *Acontia monilifera*, Walker, Lep. Het. xii. p. 798, n. 42 (1857).

♀ *A. includens*, Walker, l. c., p. 799, n. 43 (1857).

♂ *A. unio*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 32.

Natal. Coll. B. M.

The "*A. unio*" of Felder is a slightly whiter form of the species, answering to the *T. albicollis* of the allied European *T. lucida*.

### *Tarache abdominalis*.

♂ *Tarache abdominalis*, Grote (see Check List, p. 37, n. 1024).  
United States. Type in Coll. B. M.

Males only were in Grote's collection. A single female in the Zeller collection, from Texas, is erroneously labelled as "*Acontia unocula*" of Freyer. I take the latter to be a poor figure of the female of *T. aprica*. Specimens labelled as "*T. unocula*" were also in Zeller's series.

*Tarache aprica.*

♂ *Noctua aprica*, Hübner, Samml. Eur. Schmett. iii. fig. 371.

♀ *Acontia biplaga*, Guenée, Noct. ii. p. 218, n. 991.

*A. unocula*, Freyer, Neuere Beiträge, vi. tab. 534, fig. 3.

United States. Coll. B. M.

Freyer's figure gives the incorrect idea that his insect was a male, the abdomen being badly represented. Hübner, on the other hand, represents the male with a female abdomen.

*Tarache tetragona.*

♂ ♀ *Acontia tetragona*, Walk. Lep. Het. xii. p. 786, n. 12 (1857).

♂ *A. redita*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 30.

St. Domingo and Honduras. Type in Coll. B. M.

*Tarache insocia.*

♂ *Acontia insocia*, Walker, Lep. Het. xii. p. 788, n. 18 (1857)

♂ *A. concinnula*, Walker, l. c., p. 789, n. 19 (1857).

♀ *A. pyralina*, Walker, l. c., n. 20 (1857).

Sierra Leone and Accra. Types in Coll. B. M.

The type of *A. insocia* is a much rubbed male; the type of *A. coccinula* is in fairly good condition; that of *A. pyralina* is worn. All three are, nevertheless, easily recognizable. The species is allied to *T. tenuicola* of the United States.

*Tarache candefacta.*

*Tarache candefacta*, Hübner, Samml. Exot. Schmett. Zutr. figs. 587, 588.

*Acontia debilis*, Walker, Lep. Het. xii. p. 786, n. 11 (1857).

United States. Coll. B. M.

In Grote's collection a totally dissimilar yellow species is labelled as "*Tarache debilis*, Walk."

*Tarache natalis.*

*Acontia natalis*, Guenée, Noct. ii. p. 217, n. 987 (1852).

*A. formosa*, Butler, Ann. and Mag. Nat. Hist. ser. 4, vol. xvi. p. 404, n. 69 (1875).

Natal. Coll. B. M.

This beautiful species is allied to the following.

*Tarache olivea.*

*Acontia olivea*, Guenée, Noct. ii. p. 217, n. 986 (1852).

*Tarache nivos*a, Swinhoe, P. Z. S. 1886, p. 446, pl. 41, fig. 14.

Mhow and Dharmasala. Coll. B. M.



*Tarache tropica.*

♂ ♀ *Acontia tropica*, Guenée, Noct. ii. p. 217, n. 988 (1852).

♀ *A. maculosa*, Walker, Lep. Het. xii. p. 795, n. 35 (1857).

♂ *A. bipunctata*, Walker, l. c., p. 798, n. 41 (1857).

Java, Formosa, China, Ceylon, India. Coll. B. M.

Singularly enough, in this species the examples from Java are larger than those from India; the latter are, as a rule, a little brighter in colouring.

*Tarache meridionalis.*

♀ *Acontia signifera*, Walker, Lep. Het. xii. p. 796, n. 37 (1857).

♂ *A. meridionalis*, Walker, l. c., Suppl. 3, p. 785 (1865).

♀ *A. scanda*, Felder, Reise der Nov. Lep. 4, pl. cviii. fig. 27.

North and South India. Type in Coll. B. M.

The name of *A. signifera* had already been employed for an Indian species by Walker (p. 793, n. 31).

*Tarache imbuta.*

♀ *Erastria imbuta*, Walker, Lep. Het. Suppl. 3, p. 794 (1865).

*Acontia acerba*, Felder, Reise der Nov. Lep. 4, pl. cviii. fig. 25.

♂ *A. inda*, Felder, l. c., fig. 23.

N. India, Dharmasala, Rangoon, Ceylon. Type in Coll. B. M.

*Tarache detrita.*

♀ *Acontia detrita*, Butler, Trans. Ent. Soc. 1886, p. 401, n. 32.

♂ *A. clarissa*, Butler, l. c., p. 402, n. 33.

Australia. Types in Coll. B. M.

*Tarache binominata.*

♂ *Acontia costalis*, Walker, Lep. Het. Suppl. 3, p. 784 (1865).

South India. Type in Coll. B. M.

Walker had already given the name of *Acontia costalis* to a very similar female insect from St. Domingo (see Lep. Het. xii. p. 787, n. 13), so that the Indian species must necessarily be renamed.

*Tarache signifera.*

*Acontia signifera*, Walker, Lep. Het. xii. p. 793, n. 31 (1857).

*A. subfixa*, Walker, l. c., Suppl. 5, p. 1964 (1866).

Japan, China, India. Type in Coll. B. M.

Walker duplicated the name *Acontia signifera* on p. 796. The latter, however, as already shown, falls to *A. meridionalis*.

*Acontia biplaga*, Walk. (Lep. Het. xii. p. 795, n. 34), altered to *A. biplagiata*, as having been previously used (Suppl. 3, p. 781), but unnecessarily, as it was already redescribed on the previous page as *Euphasia subapicalis*; also *Acontia pulchra* (Lep. Het. xii. p. 797, n. 39) and *A. bimacula* (Lep. Het. xii. p. 796, n. 38) are none of them Acontiidæ, but Heliothidæ, and belong to the genus *Leocyma*.

## CHOBATA, Walk.

*Chobata discalis*.

*Chobata discalis*, Walker, Lep. Het. xii. p. 838, n. 1 (1857).

*Erastria concludens*, Walker, l. c., Suppl. 3, p. 791 (1865).

St. Domingo. Types in Col. B. M.

## LITHACODIA, Hübn.

*Lithacodia bellicula*.

*Lithacodia bellicula*, Hübner, Samml. Exot. Schmett. Zutr. figs. 85, 86.

*Hydrelia semichalcea*, Walker, Lep. Het. Suppl. 3, p. 797 (1865).

United States. Coll. B. M.

Hübner's figures of this species are so bad that it is no wonder Walker failed to recognize the insect intended by them.

(To be continued.)

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

NOTES ON THE SEASON OF 1891. — In spite of the very bad weather we have had, I found the season of 1891 very productive of insects everywhere I have collected, and perhaps the following notes from various localities may be of interest. Unless otherwise mentioned Crouch End is the locality. The season commenced with *Phigalia pilosaria*, one male on a fence at Mill Hill. *Anisopteryx æscularia* appeared on the fences on March 15th, but *Hybernia progenmaria* not until April 4th. Towards the end of March and early April *Saturnia carпинi* emerged in my breeding-cages from Scotch larvæ, and, though the females were the normal size, the males seemed very small. Two visits to Hampstead Heath, on April 17th and 21st, resulted in *Larentia multistrigata* in any numbers, flying round the furze-bushes at dusk, and later on at rest on the same bushes. In Hampstead Lane, on the same nights, I found *Hybernia progenmaria* in plenty, and a single *Scotosia certata* on the gas-lamps. Three visits early in May to the same place turned up *Taniocampa gothica*, *T. rubricosa*, *T. stabilis* and *T. instabilis* fairly plentifully on the willows. The first and last-named species also occurred sparingly on the Highgate lamps, in company with *Selenia illunaria*. On these same visits we found larvæ of *Boarmia repandata*, *Noctua xanthographa*, *N. baja*, *N. augur*, *N. rubi*, *N. brunnea*, and *N. triangulum*, very plentiful on the dwarf willows, which all emerged in due course. On a visit, early in April, to the Wake Arms, Epping Forest, we took *Asphalia flavicornis*; and a second visit in May, by night, for *Triphæna fimbria*, resulted in one larva only. By searching at night for larvæ at Stamford Hill, we obtained much the same as at Hampstead, but in addition *Leucania pallens* and *L. lithargyria*. From Waldringfield, near Woodbridge, Suffolk, we obtained pupæ of *Dicranura vinula*, *D. bifida* and *D. furcula*, also most of the larvæ already mentioned, and in addition *Triphæna orbona*, *T. ianthina*, *T. interjecta*, and *Orthosia*



*upsilon*. By this time *Abraxas ulmata* commenced to emerge, and continued on right into August. The larvæ came from the Lake District in September, 1890. On May 21st the first *Odontopera bidentata* appeared, and the species continued on the gas-lamps sparingly until the middle of June. From May 30th to June 6th I was staying at Brockenhurst with my cousin, Mr. Ogden, and the results of our visit appeared in the December No. of this magazine. The larvæ we took there by beating—viz. *Catocala promissa*, *Liparis monacha*, *Halias quercana*, *Boarmia roboraria*, *Cleora lichenaria*, *Himera pennaria*, *Agriopis aprilina*, *Hemithea thymiaria*, &c.—produced imagines in the course of the season. We also took four or five larvæ which died, and which I have since discovered to be *Lithosia quadra*. From some of the *Platypteryx falcata* we took we obtained eggs, the larvæ from which fed up well, half of them emerging in July and early August, one on Oct. 12th and another on Nov. 23rd, and the remainder I have still in perfectly healthy condition. *Ptilodontis palpina* turned up at Finchley on June 19th, and *Hadena pisi* at the same place on the 24th. The lamp which produced *H. pisi* accommodated at the same time six *Eupithecia*, five *Miana*, one *Agrotis corticea*, one *Arctia menthastri*, three *Hadena oleracea*, and two *Melanippe fluctuata*. One insect this year I have never before seen in such abundance, viz., *Arctia lubricipeda*. The imagines literally swarmed everywhere, and in the autumn every low-growing plant in the garden was almost eaten bare by the larvæ. I found them feeding on every plant, shrub, or tree that I know of, one even devouring a pear in a shed. Throughout June and July common things came to treacle in abundance at Stamford Hill, but nothing of any consequence among them. At dusk *Plusia pulchrina* was taken at Crouch End; and *Plusia chrysitis*, *Hecatera serena* and *Apamea ophiogramma* at Stamford Hill. The evening of June 30th we spent at Chingford, and found the males of *Angerona prunaria* plentiful. We also took several *Thyatira batis* (flying over the brambles), *Odontopera bidentata*, *Aplecta nebulosa*, *Miana arcuosa*, and many commoner things. From some friends staying at Waldringfield we received larvæ of *Bombyx quercus* and *Odonestis potatoria*, the latter in any quantity; also imagines of *Triphæna interjecta*, *Thyatira derasa*, *Habrostola tripartita*, *Plusia pulchrina*, *P. chrysitis*, and others. July 6th I went to Clacton for the day only, but had no apparatus with me. Finding *Zygæna filipendulæ* cocoons abundant, I collected about 160, in the hope of getting some varieties, but they all emerged quite typical. Among them I found fourteen cocoons of *Odonestis potatoria*, all spun up on some reed-stems which were growing among the grass. On the 9th these commenced to emerge, and all came out well except two that were ichneumonised. At Theydon Bois (Epping Forest), on July 11th, I found a fine female *Bombyx quercus* drying its wings. *Metrocampe margaritaria*, *Lomaspilis marginata*, *Ephyra trilinearia* and *Timandra amatoria*, all fell frequently to the beating-stick, but nothing at all out of the common occurred. On July 12th *Bombyx quercus* and *Lasiocampa quercifolia* (larvæ from Wicken Fen in the early spring) commenced to emerge, and came out very well. One *B. quercus* is still in pupa, and appears to be quite healthy. Two more, which seemed unable to break the cocoon, we assisted. The male did not expand at all, but the female developed to its full size. On July 17th the first *Apamea ophiogramma* was taken at Stamford Hill, flying at dusk over a flower-bed; another was taken two evenings later, and two more on the 24th; they were all more or less worn, though none of them very bad. On the afternoon of July 25th I paid a

visit to Darenth Wood. Only having about three hours' beating, I turned up *Acidalia rusticata*, *Scotosia rhamnata*, *S. vetulata*, *Phibalapteryx tersata*, *Melanippe procellata*, *Eupithecia isogrammata*, and *Iodis vernaria*. *Pseudoterpna cytisaria* occurred on Dartford Common, and *Thecla quercus* sparingly in the Wood. The first week in August I spent at Lowestoft, but did not do much collecting: a very noticeable feature was the great abundance of *Liparis auriflua*. I have never seen them before nearly so abundant. The next visit produced *Hydræcia nictitans*, *Hepialus hectus* and *Leucania pallens* in abundance, and *Strenia clathrata* sparingly. Treacling at Waldringfield on one or two nights, between August 16th and 31st, proved very successful as regards numbers, moths coming to the pitches in great abundance. *Noctua umbrosa*, *N. dahlii*, *Agrotis puta*, *Amphipyra tragopogonis*, and many commoner things, were very plentiful; whilst *N. c-nigrum*, *A. pyramidea* and *Catocala nupta* occurred sparingly. Two *Notodonta dictæa* (one quite fresh) were found at rest on willows, and a few larvæ of *Ptilodontis palpina* and *N. camelina* were obtained by searching. *Triphæna ianthina* was abundant, and *Cidaria picata* was not at all uncommon, but *Acidalia emarginata* was scarce and local. Single specimens were obtained of *Habrostola tripartita*, *Dianthæcia cucubali*, *Ennomos tiliaria*, *Cleora lichenaria*, and *Melanippe unangulata*; larvæ of *Dianthæcia cucubali*, *D. capsicola*, *Eupithecia venosata*, *Amphidasys betularia*, and *Cidaria miata*. The afternoon of Sept. 12th was spent at Benfleet, where we obtained fifty-three *Geometra smaragdaria* larvæ. *Euclidia mi* larvæ were plentiful in the coarse grass, and *Agrotis tritici* imagines very abundant. Through September *Catocala nupta* occurred sparingly on the fences, and *Luperina testacea* and *Hydræcia micacea* (one only) on the gas-lamps. One very dark *Ennomos angularia* was taken, and several of the usual type at light. *Phlogophora meticulosa* turned up on Oct. 3rd, and *Miselia oxyacanthæ* (several). *Scopelosoma satellitia* (one), *Oporabia dilutata*, *Cheimatobia brumata* (common), and *Himera pennaria* (a few), occurred on the lamps throughout the month. Two days' pupa-digging at Waldringfield, Oct. 1st and 2nd, produced *Notodonta dictæa* (six), *N. camelina* (two), *P. palpina* (two), *Tæniocampa* (?) abundant, *Smerinthus populi* and *S. tiliæ*, *Pæcilocampa populi* (three), *Acronycta ligustri* (one), *A. tridens* (one), *Agriopsis aprilina*, and *Amphydasis betularia* (six). A nice *Heliphobus popularis* was found at rest. An afternoon's pupa-digging at Chingford in November resulted in *Tæniocampa gothica* (abundant), *T. cruda* (common), *Smerinthus tiliæ* (several), and many commoner things. A nice bred series of *Hybernia defoliaria* concludes the list for 1891, which I think has been the best season for some years. The above notes are the joint result of my cousin Mr. Ogden's captures and my own, as we have collected together for the most part. — RUSSELL E. JAMES; Chesterville, Hornsey Lane, Highgate, N., January, 1892.

Since writing the above I have bred, from some thirty or forty pupæ from Chingford, a dozen fine *Phigalia pilosaria* and six *Nyssia hispidaria*, and have still some more to emerge. Until they emerged I had thought the pupæ were those of *H. progemma*.—R. E. J., Feb. 9, 1892.

A MONTH'S COLLECTING AT SIDMOUTH, SOUTH DEVON.—I was collecting at Sidmouth with two of my brothers, from August 7th to September 5th, but found most imagines in that district very scarce. Of the *Rhopalocera*, *Argynnis paphia* was abundant in Harpford Woods. *Thecla quercus* was rare and battered, and we only captured one specimen of *T. betulæ*. *Lycena argiolus* was seldom to be seen, but early in September we came



across a dense colony of *Lycæna adonis*, some of the females being very prettily marked. *Satyrus semele* seemed almost to have abandoned the moss on which it swarmed during the two previous years. We did not see a single *Argynnis adippe* or *A. aglaia*, but perhaps we were too late for them, although in other years they have always proved very numerous in August. On one bright, sunny day we captured between us twenty-one specimens, in fine condition, of that delicate little insect, *Leucophasia sinapis*, which, strange to say, were taken on the grassy slopes of the cliff, and, contrary, I think, to their usual custom, kept fluttering from flower to flower. On the same cliffs *Hesperia actæon* disported itself in great numbers for a short time, but a storm of rain, which continued for several days, completely swept them away. I should like to mention that *Colias edusa* caused us the same disappointment as last year, and failed to put in an appearance. Turning now to the Geometers, *Acidalia subsericeata* and *Gnophos obscurata* were exceptionally abundant, while *Emmelesia affinitata*, *E. decolorata*, *Cidaria russata*, *Selenia illunaria*, *Coremia ferrugata*, *C. propugnata*, *Melanthia ocellata*, *Ypsipetes elutata* (a few black varieties), could always be beaten from the hedges. We also took single specimens of *Ellopiæ fasciaria*, *Geometra papilionaria*, *Metrocampe margaritaria*, *Uropteryx sambucaria*, *Melanippe procellata*, *Eupisteria heparata*, *Acidalia scutulata*, and *Epione apiciaria*. During the daytime *Phytometra ænea*, *Bombyx quercus*, and *Triphæna interjecta* were fairly common, but the last-named was in shocking condition. Sugaring proved quite futile until the last week, when the bait suddenly turned attractive, despite the rain and high wind, and brought a host of visitors, including *Gonoptera libatrix*, *Cosmia affinis*, *C. diffinis*, *Noctua c-nigrum*, *N. plecta*, *N. rubi*, *Triphæna orbona*, *T. interjecta*, *T. pronuba*, *T. ianthina*, *Amphipyra pyramidea*, *A. tragopogonis*, *Acronycta rumicis*, *Miana furuncula*, *Caradrina cubicularis*, *Agrotis puta*, *Oxyia putris*, *Luperina testacea*, *Cidaria russata*, *Eupithecia castigata*, *Campptogramma bilineata*, *Ypsipetes elutata*. Of course *Noctua xanthographa*, *Xylophasia polyodon*, and *Apamea oculea* were very plentiful. The paucity of imagines was counterbalanced, however, by the quantity of various larvæ, especially of the common Cuspidates. *Notodonta ziczac* occurred in every stage of growth, both egg and full-grown larva appearing on the same tree; *Ptilodontis palpina* and *Notodonta dictæa* were fairly abundant; *Dicranura bifida* (egg and two larvæ), *Smerinthus ocellatus* and *S. populi*, with a sprinkling of *Lobophora sexalisata* and *Amphidasys betularia*, were also found on the poplars; *Saturnia carpini*, *Thyatira batis*, and *Bombyx rubi* frequented the low-lying brambles on the hills, while *Melanippe galiata* was tolerably common on the *Galium mollugo*.—C. M. WELLS; Hurstfield, The Avenue, Gipsy Hill.

PROTECTIVE COLOUR OF *LOPHOPTERYX CAMELINA*.—The following is, I think, a rather remarkable instance of the instinctive power possessed by Lepidoptera of taking advantage of their surroundings for the sake of protection. On August 10th, last year, when on my way trout-fishing in South Wales, I had occasion to traverse a long lane bounded on one side principally by large willow bushes. Interspersed amongst the foliage were many blighted or withered leaves of a deep red-brown colour. Noticing as I thought a slight peculiarity in one of them, on an overhanging branch, I found, on close examination, that it was a beautiful specimen of *Lophopteryx camelina*. So closely did it resemble the withered leaves in colour and form at a little distance off, that it must have been by the greatest chance it did not escape notice.—T. B. JEFFERYS; Bath, Feb. 5, 1892.

**LARVA OF APAMEA OPHIOGRAMMA IN NOTTS.**—When I identified the larvæ sent to me by Mr. Pearson, of Chilwell, Nottingham, as that of *A. ophiogramma* (Entom. xxiv. 299), I had not the least doubt in my own mind but that the caterpillar was correctly determined. It seemed to agree with a continental description of the larva of the species, and also reminded me of a larva I found on ribbon grass in my garden some years ago, from which I bred a crippled specimen of *ophiogramma*. Mr. W. H. Harwood, of Colchester, has been good enough to enter into correspondence with me upon this matter, and his remarks, cited below, cause me to think that possibly my determination of Mr. Pearson's larva may have been erroneous. Referring to *Apamea unanimitis* and *A. ophiogramma*, Mr. Harwood says:—“Both species feed on ribbon grass; but I expect that, while *unanimitis* feeds up in the autumn and hibernates full-fed, *ophiogramma* is to be found feeding in the spring. I have bred the former species repeatedly, and have larvæ hibernating now; I shall find others about April if all goes well, but they do not feed after hibernation. I have dug them out of the ground when pupa-digging, and frequently found them under loose bark and in flood refuse, &c., when searching for beetles. No doubt the principal food of both species is *Phalaris arundinacea*, of which the ribbon grass is a cultivated variety. The larva of *unanimitis* lives in a sort of case formed by drawing a blade of grass together at its edges, and as these cases are heavy when the larvæ grow large they can easily be found hanging on the plants. When quite full-fed the larvæ sometimes go under ground during the day-time I fancy. They also feed on sedges, and can easily be found by parting the leaves.” I do not now remember whether I found the larva of *ophiogramma* in the autumn or spring; but I distinctly recollect that in the spring or early summer of the year following that in which I bred *ophiogramma* I was away from home, and on my return I found the patch of ribbon grass had been dug up and destroyed because it appeared to be unhealthy. I may add that I am acquainted with the larva of *A. unanimitis*, as I frequently found it under bark of willow trees in the Mill Hill district. Curiously enough the Nottingham caterpillar did not suggest this species, but probably the ribbon grass may have misled me if my identification should ultimately prove to be wrong.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W., Jan. 4, 1892.

**LEPIDOPTERA OF BOGNOR.**—Mr. Alfred Lloyd, of the Dome, Bognor, has prepared a list of the Lepidoptera taken by himself in his district. In fact the 291 species enumerated by him appear to have been captured, with one or two exceptions, in his own grounds. The list comprises—20 Rhopalocera; 8 Sphinges; 26 Bombyces; 98 Noctuæ, including *Heliothis armigera* and *Aventia flexula*; 83 Geometræ, among which are *Eurymene dolobraria* and *Eupithecia fraxinata*; 20 Pyralides; 5 Pterophori; 8 Crambi, the best species being *Crambus verellus*; 23 Tortrices. It may be mentioned that this list, which was originally published in the ‘Proceedings of the West Sussex Nat. Hist. Soc.’ for 1889, has been issued as a reprint, and also appears, together with lists of other natural-history objects of the neighbourhood, as an appendix to Webster and Webb's ‘Bognor Guide.’

**CATOCALA NUPTA RESTING ON CONCRETE WALLS.**—I have noticed a peculiar habit of *Catocala nupta* which I do not remember having seen recorded before. The habit in question is the fondness which this moth



has for settling on the rough concrete with which the sides of some houses are coated. In this position the marbled greyish colour of the anterior wings corresponds very closely with the dull grey of the concrete, and the insect, especially if a considerable height above the ground, is comparatively difficult to detect, and might readily be passed by unnoticed. I used to consider *C. nupta* a rarity in Enfield, but last September—from the 8th to the 29th of the month—I took six specimens on our house alone, and another on a house not far from here which I happened to be passing. The best days were the 28th and 29th of September, as I saw three specimens on each morning. I never took a specimen in wet weather, and, I may also remark, all the moths seen were on the N.E. side of the house. The moths of this genus are well known to be shy and difficult to capture, and it was only by taking great caution not to frighten them by approaching the ladder too near that I managed to secure seven specimens of this insect out of nine seen altogether. I found the best method of capturing them was to creep slowly up the ladder till within range, then to clap the net quickly over them; they almost invariably dart off in a direction at right angles to the wall, usually before even the net touches the wall. I sugared throughout September and October at intervals, but only took one *C. nupta* in this way; so from this circumstance I am disposed to think that, by searching similar houses and buildings, more specimens of this species could be taken than in any other way. To show how thoroughly the moth harmonizes with its surroundings in this position, and what a good instance of "protective resemblance" this is, I may mention that on one occasion I pointed out one of these moths, which had settled near the top of the house, to a friend; but even when he saw it he could not believe that it was a moth, and was not convinced till he saw it fluttering in my net.—HENRY D. SYKES; The Cedars, Enfield, Feb. 11, 1892.

DANAIS (ANOSIA) PLEXIPPUS AT ASHBURTON, N. Z. — On the 17th of the present month I observed a perfect and apparently newly-emerged specimen of this beautiful butterfly flying in a garden here. It flew rapidly about the garden for several minutes, and ultimately disappeared over a small plantation of young pine trees. It was the only specimen I have seen on the wing during the last fourteen years. The day was intensely hot, and I am of opinion that it had not long emerged. On the same day I observed the first fresh specimens of the season of *Pyrameis gonerilla*. — W. W. SMITH; Ashburton, N. Z., December 29, 1891.

SUGARING IN NORTH STAFFORDSHIRE.—Although in the New Forest and at Sherwood sugaring last year appears to have been a failure, yet in North Staffordshire it was more successful than it has been for several years past. In a large tract of heathy woodland, not far from the Shropshire border, my friend Mr. F. C. Woodforde had a very good time of it in August and September. *O. suspecta*\* was as abundant as it was in 1875, the only year in which I met with it in this district, and as varied in colour—from dark red suffused with a purple gloss to brown marbled with ochreous markings. *N. neglecta* was also common: the usual colours are brick-red and grey, with many intermediate shades; but some specimens taken were of a pale yellow, and one in particular deserves special notice. It is a deep

\* Mr. Hewett also records this species as having been unusually common in the York district last year. *Vide Entom.* xxiv. p. 269.—Ed.

yellow, as decided as a male *Russula* or as *Euperia fulvago*. I am not sure that these yellow varieties are not peculiar to North Staffordshire, and perhaps also to the past season; at any rate, with a long experience of this species, I do not remember to have observed this variety before; nor does Newman mention it. Another species that came to sugar in profusion was *N. dahlii*, varying in hue from dark brown with ochreous stigmata to the darker shades of *N. festiva*. *T. fimbria* was also in fair numbers, in all its well-known varieties. And, lastly, *C. solidaginis* was a drug in the market: this is a moth which appears to have become much more abundant of late years; in the daytime it may readily be found hiding in the crevices of the trunks of pine trees and on the stems of the heather; at night it comes freely to sugar. I may also say that in June *A. tinctoria* swarmed at sugar.—(Rev.) T. W. DALTRY; Madeley Vicarage, Staffordshire.

MICROPTERYX SANGII AND M. CALEDONIELLA.—Last Good Friday I had an hour or so on new ground near Carlisle, and found *Micropteryx* in swarms. I sent them on to my friend Mr. C. G. Barrett to overhaul, and he returns them as *semipurpurella* (25), *sangii* (7), *purpurella* (18), *caledoniella* (1), *sparmarella* (1),—not a bad catch.—J. B. HODGKINSON; Ashton-on-Ribble.

BLACK PHIGALIA PEDARIA (= PILOSARIA).—I have been fortunate again in taking a black specimen of the above, on Feb. 12th. During the week ending 13th inst. we had a few fine days with plenty of sunshine, when I took a short stroll (by way of a beginning) to a small plantation near here, where I noted about a dozen specimens of *pilosaria* at rest on the tree-trunks, apparently fresh out; and low down, nearly at the foot of one oak here, I saw this black specimen. This is the second specimen (the first I took Feb. 27th, 1886) I have taken in this neighbourhood.—J. HARRISON; 7, Gawber Road, Barnsley.

BREEDING NOTODONTA DICTÆOIDES.—I was very much interested in Mr. A. T. Mitchell's report of his experience with the larvæ of above (*ante*, p. 20). I have attempted to breed it for years, in many different ways, without success. I am generally able to obtain two or three wild females. The area on which they are found is very small, being only a row of birches bordering a fir wood. I have found them more or less for about eighteen years, and, by very diligent searching, have never found more than about two dozen larvæ (more often only five or six) in the season (October). I think this is a proof that they must be difficult to rear, as it is a most prolific depositor of ova, having had repeatedly above three hundred eggs from one female. Last year I had over a thousand young larvæ; only three lived to pupate, and they have since dried up. I have never before been able to keep any after about half-grown. In 'The Entomologist,' of I think 1890 (I cannot find it just now), a correspondent says the Notodontidæ are apt to develop cannibalistic propensities\* in confinement. They certainly leave their food from the first and congregate together, and lose a great deal of time and energy in spinning and fighting; but I have never been able to discover any bites under the microscope, and the nearly full-grown larva always lives, no matter how closely confined. I have never seen one ichneumonised. They must be subject to some disease in a wild

\* The Rev. Bernard Smith makes some remarks to this effect (Entom. xxii. p. 102).—ED.



state. As the fact of the trees I mention being in a line almost makes a private preserve of the locality, so they really ought to be there in numbers. I might mention another thing—the species is decidedly not double-brooded; but occasionally a specimen from the autumn brood (not forced) will make its appearance about the end of May, and twice I have found larvæ at the end of July and first week in August, when the moth emerges here. If I am as fortunate as usual in securing a female this year, I shall try once more (for the last time if a failure) with a number of very small seedling birches.—EDWARD MEAD; 22, Monks Road, Lincoln, Feb. 13, 1892.

THE LEPIDOPTERA OF THE SHETLAND ISLANDS.—I understand that Mr. McArthur is about to proceed to the Shetlands, in quest of the many curious and interesting forms of Lepidoptera occurring in those islands. Already about 94 species of the Order are catalogued from this, the most northern, part of Britain; but probably there are still several others awaiting discovery. It is to be hoped that in return for the trouble attending an expedition of this kind Mr. McArthur will be rewarded by meeting with some additions to the fauna list, as well as by being successful with those species he knows so well how to obtain.—RICHARD SOUTH.

CAPTURES OF DIPTERA IN 1891.—*Anthomyia pluvialis*, bred from oak-apple on May 4th; *Exorista chelonice* and *Tipula vittata*, on May 20th; *Cheilosia maculata* and *Pachyrrhina annulicornis*, on June 9th; *Tipula gigantea*, more common than I have ever seen it; *T. flavolineata* and *fascipennis*, on June 19th; *Erioptera flavescens* and *Molobrus ruficauda*, on June 21st; *Erioptera macrothalma* and *lutea*, on June 24th; *Lipsothrix errans* and *Limnobia ocellaris*, on June 22nd; *Pachyrrhina cornicina* and *Nephrotoma dorsalis*, on July 24th; *Limnobia senilis*, *Pachyrrhina imperialis*, and *Platyura discoloria*, on July 28th; *Callomyia amœna* and *Oxy-cera pardalina* and *longicornis*, on August 6th; *Leptomorphus walkeri* and *Sargus bipunctatus*, on Sept. 1st; all at Glanvilles Wootton. *Calobata ephippium* and *Platychirius immarginatus*, at Abbotsbury, on June 15th; *Beris morrissii* and *Chrysotus molliculus*, at Hook Park, on July 15th; *Leucopis puncticornis*, on Chesil Beach, on July 18th; and last, but not least, one of *Thalassomyia frauenfeldi*, in the Isle of Man, on Oct. 8th.—C. W. DALE; Glanvilles Wootton, Jan. 4, 1892.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—February 10th, 1892.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice-Presidents for the session 1892-93. Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.; Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S. 'Pembroke,' Chatham; the Rev. J. A. Mackonochie, B.A., of 76, Grant Street, Glasgow; and the Rev. A. Thornley, M.A., of South Leverton Vicarage, Lincolnshire, were elected Fellows of the Society; and Mr. Henry A. Hill and Major H. Murray were admitted into the Society. Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Dr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of

which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued. Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris. Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere. Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington. The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phæbe*, taken in Grenada in May, 1891. Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupæcilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge. Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included *Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itinerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphænogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigriventris*, Mayr, and *M. nigrocincta*, Sm.; *Leptomyrmex erythrocephalus*, Fab., and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new. Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued, in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes, and Mr. Barrett took part. Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 28th*, 1892. Mr. W. H. Tugwell, Ph.C., President, in the chair. The Treasurer submitted his financial statement, from which it appeared there was a balance of £48 to the Society's credit. The Council's Report was read by the Secretary, and dealt with the work done during 1891. The election of officers was then taken, and resulted in the election of Mr. C. G. Barrett, F.E.S., as President; Messrs. J. Jenner Weir, F.L.S., F.Z.S., F.E.S., and R. South, F.E.S., as Vice-Presidents; Mr. E. Step as Treasurer; Mr. W. West as Curator; Mr. D. J. Rice as Librarian;



Messrs. H. W. Barker and A. Short as Secretaries; and Messrs. T. R. Billups, F.E.S., J. T. Carrington, F.L.S., C. Fenn, F.E.S., F. W. Frowhawk, F.E.S., J. Henderson, W. H. Tugwell, Ph.C., and J. W. Tutt, F.E.S., as Council. Mr. W. H. Tugwell read his Presidential Address, and the meeting closed with votes of thanks to the various officers.

February 11th.—Mr. C. J. Barrett, F.E.S., President, in the chair. The President made some observations on taking the chair. Mr. J. Jenner Weir exhibited several species of the genus *Cymothoe*, viz. *theodota*, *æmilius*, *cænis* and *theobene*, and read notes with reference to the extreme sexual difference; the males, in most cases, were an ochreous or creamy colour, more or less clouded with black; while on the other hand, the females rarely had any of the ochreous or cream colour, and their markings were very varied and presented a very spotted appearance. Mr. Weir pointed out the differences in the species exhibited. Mr. Weir also exhibited specimens of *Pieris napi*, L., and allied forms, which by some entomologists were considered distinct or sub-species, and by others mere local varieties, and remarked that the object of the exhibition was rather to show the effect of environment and season of emergence on the intensity of coloration both on the upper and under sides of the wings. Mr. Weir then contributed some interesting notes on his exhibit. Mr. Austin exhibited an extremely rare form of *Lycæna bellargus*, Rott., having the brilliant blue colour entirely suffused with black scales, and another example with beautiful markings on the upper side; both specimens were taken at Folkestone. Mr. Tutt, a bred series of *Hadena pisi*, L., varying from grey to a deep purplish red; three specimens of *H. dissimilis*, Knock., one with longitudinal striations; a small specimen of *Arctia villica*, L., the spots being very much reduced; three specimens of *Cerastis vaccinii*, L., one having the outer margin curved as in *spadicea* or *ligula*; *Amblyptilia acanthodactyla*, Hb., and *A. punctidactyla*, Haw., bred from larvæ, and remarked that it was considered by some that these were distinct species. Messrs. Barrett, Weir, Carrington, Tutt, and Dobson made some remarks relative to this exhibit. Mr. Adkin showed smoky varieties of *Nemeophila plantaginis*, L. Mr. Farren, a long series of *Peronea variegana*, Hb., taken at Scarborough in September, and remarked that there were plenty of the ordinary form of the species, but the black form was as plentiful as the ordinary form. Mr. Billups, a larva found feeding on tomato from Teneriffe; Mr. Tutt expressed an opinion that it was *Prodena littoralis*, Bdv. Mr. Herbert Williams, a dark variety of *Calymnia trapezina*, L. Mr. Billups read notes on shells obtained from drift collected by Mr. C. G. Barrett in Wales. Mr. H. Wallis Kew read a paper "On the Dawn of Memory in the Animal Kingdom," and in the discussion which followed Messrs. Dobson, Tutt, Weir, Barrett, and Wallis Kew took part.—H. W. BARKER, *Hon. Sec.*

The annual dinner of the South London Entomological and Natural History Society took place at the 'Bridge House Hotel,' on the 9th inst., the chair being taken by T. R. Billups, F.E.S., the vice-chair by J. W. Tutt, F.E.S. At the close of the dinner the usual Royal toasts were proposed by the Chairman; and the Vice-Chairman, in proposing the toast of the Society, said the past year had been most successful; although there was a slight falling off in the membership, the financial position was much more healthy, and the position of the Society was much stronger than in previous years, and he concluded by hoping that the year just entered on would far exceed any previous year, both as regards membership

and scientific work; with the toast he wished to couple the officers of the Society, who had contributed largely towards the success of the Society during the year. In the unavoidable absence of the President and Vice-Presidents, the Secretary and Librarian replied. The remaining toasts were introduced and responded to very shortly, owing to the number of gentlemen present who were desirous of making the meeting a success by aid of their musical talent. The musical arrangements were in the capable hands of Mr. S. Scammell, and the following gentlemen assisted:—Messrs. Alf. Atkin, Winkley, Frank Lane, Gurney Russell, G. Crawford, Henry Porch, Chas. Early, Alfred Pearce, Teddy Rogers, and Ganod; Mr. Bryan presiding at the piano, and Mr. Reed reciting several popular pieces.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — *February 8th, 1892.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. Henry Champ and W. H. Holt were elected members. Mr. W. E. Sharp read a paper entitled "Some Remarks on the Hydradephaga of the District," illustrated with specimens and large coloured diagrams. The author referred to the general classification of the Coleoptera, and pointed out that in the genus *Dytiscus* the whole physiology was to adapt them to less resistance in swimming. He then gave a *resumé* of the records of local species, of which 74 species had been recorded out of 129 known to be indigenous to the British Isles, only four genera being unrepresented. The President exhibited fine varieties of *Eunomos angularia*. Dr. Ellis, *Pulvinaria camellicola* (a rare species of *Coccus* from camelia trees). Mr. Collins, four specimens of *Deilephila galii*, bred by him from twenty-two larvæ taken on *Epilobium angustifolium* at Warrington in 1889 (the specimens were very small, and these were the only perfect ones), and a variety of *Noctua festiva* with distinct black transverse lines on a uniform ground colour. Mr. Schill, *Hydrous angustior* from Milan, flying round electric light. Mr. Stott, a collection of local Hydradephaga. Mr. Pierce, *Agrotis candelarum* from Saxony, and its var. *ashworthii*.—F. N. PIERCE, *Hon. Sec.*; 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — *February 1st, 1892, Annual Meeting.*—Mr. W. E. Blatch, President, in the chair. Mr. W. D. Spencer, Regent Place, Birmingham, was elected a member. The Secretary read the Annual Report of the Council, which showed the number of members to be about the same as at the last Annual Meeting; and the Treasurer presented his Annual Statement, showing a balance in hand of £4 18s. 4d. The following officers for the ensuing year were elected:—President, Mr. W. E. Blatch, F.E.S.; Vice-President, Mr. G. H. Kenrick, F.E.S.; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. Johnson; Auditors, Messrs. Herbert Stone, F.L.S., and A. Stone Wainwright; and Hon. Sec., Colbran J. Wainwright. Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn were elected as remaining members of the Council. Mr. C. Runge showed cocoons of *Trochilium apiformis* containing larvæ, which he had dug out of poplars, near the roots, at Arley.

*Feb. 8th, Social Meeting.*—By invitation of the Council, the members and a few friends met together at the Grand Hotel, when a very pleasant evening was spent. A number of interesting books and insects were shown and discussed, and the pleasure of the evening was much added to by the music which one or two members and friends kindly provided.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*



HENRY WALTER BATES.

BORN, 8th FEBRUARY, 1825.

DIED, 16th FEBRUARY, 1892.

Aged 67 years.

LOVED AND RESPECTED.







*Inu sin cul*  
*H W Bates*

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HENRY WALTER BATES, F.R.S.

(WITH PORTRAIT.)

HENRY WALTER BATES, whose name is known over the wide world as that of the author of the 'Naturalist on the Amazons,' was born in Leicester, 8th February, 1825: he must have developed very early a taste for Entomology, for when only seventeen or eighteen years of age he published notes on Coleoptera in the 'Zoologist.' His natural taste was spurred by the spirit of emulation that so often moves young collectors. Edwin Brown was a neighbour, and somewhat a senior, and Bates was wont in after life to relate the determined efforts he made as a young man to find some of the rarer or more interesting species that his friend had secured.

Bates came of a mercantile family, and was himself destined for a career of this nature; but about the year 1845 he made the acquaintance of Alfred Russel Wallace, who was then an English master in a school at Leicester, and who was interested in Botany. Bates appears to have enlisted the interest of Wallace in the cause of Entomology, and, as we learn from Wallace himself, "the latter at once took up beetle-collecting, and after he left Leicester, the following year, kept up an entomological correspondence with his friend. Two years later, Wallace proposed a joint expedition to Para, in order to collect insects and other natural objects, attracted to this locality by the charming account of the country in Mr. W. H. Edwards's 'Voyage up the Amazon,' a choice confirmed by the late Edward Doubleday, who had just received some new and very beautiful butterflies collected near the city of Para. The two explorers sailed from Liverpool in April, 1848, in a barque of 192 tons burthen, one of the very few vessels then trading to Para, and the results of their journey are well known to naturalists. They made joint collections for nearly a year while staying at or near Para, but afterwards found it more convenient to take separate districts and collect independently."

In 1848, as stated by Mr. Wallace, Bates arrived in the



Amazons Valley, and in 1849 a series of letters from him commenced to appear in the 'Zoologist.' These letters are very interesting reading. In those days steam travelling had not been commenced on the Amazons, and penetration far up the river was a matter of considerable difficulty. Moreover, the means at the disposal of the explorer were very small; he had in fact to support himself as he went on by the sale of specimens in Europe. Hence it is no wonder that he became somewhat disheartened; and we find from the letters in the 'Zoologist' that after he had been two or three years in S. America, he had determined to return to England. He did not do so, however, until the year 1859, fully eleven years after his arrival in S. America. During this period he underwent many hardships, and displayed much self-denial, his expenses, as he tells us in the letters we are drawing from, amounting to only about two pounds per month. Notwithstanding the difficulties he experienced, he persevered resolutely in the formation of collections of zoological specimens, and discovered a very large number of new species. The "exquisite pleasure," as he himself said, "of finding another new species of these lovely creatures supports one against everything." He also wrote several papers while travelling that were published in Europe, one among them being a very important contribution to the Natural History of the White Ants. How many species Bates actually discovered will probably never be known, as some portions of his collections have not yet been worked out. It was, however, stated that in the five years from 1851 to 1856 he met with 5860 species of insects.

On his return to this country, Bates commenced the working out of his collections in an energetic and thorough manner. He published papers on various orders, but his attention was at first chiefly given to the Lepidoptera, especially to the butterflies. Thirty years ago the knowledge of butterflies was much less advanced than it is at present, and Bates contributed greatly to its progress by making a more satisfactory classification of the Rhopalocera than the one then in vogue. The system thus introduced by Bates still forms an important part of rhopalocerous taxonomy. It was, too, at this period that he published his famous paper in the 23rd vol. of the 'Transactions of the Linnean Society' calling attention to the resemblances between different species of Lepidoptera, and in fact founding the theory of Mimicry. When he had completed his work on the Butterflies, he parted with the material he had accumulated, selling it to Messrs. Godman and Salvin, of whose unrivalled collection it still forms an important part.

In 1864, Bates became Assistant-Secretary in the Royal Geographical Society, and continued in this post to the great advantage of the Society till the time of his decease. This position he obtained, not by his own seeking, but on the

suggestions of the prominent men of the Society; and he accepted it, I believe, only after his services had been rejected by the officials or rules of the British Museum.

After his appointment to the Secretaryship, his entomological work was necessarily curtailed. But he occupied himself in his leisure with diligent and detailed work at the Coleoptera, and described a very large number of new species of Cicindelidæ, Carabidæ, Lamellicornia, and Longicornia. During the thirty-three years that elapsed between his return from the Amazons and his decease he became widely known as an entomologist, and his personal acquaintances amongst entomologists of repute were probably more numerous than those of any other individual. He was twice President of the Entomological Society of London.

As may well be expected, Bates was thoroughly appreciated by the Geographers. Lord Aberdare, an ex-President of the Geographical Society, has expressed the following true judgment about him:—"He was one of the rarest characters I had ever known. Considering the vastness and variety of his knowledge, it was astonishing to find a man so gifted, with such entire self-effacement and modesty. You may well believe that the office of President . . . is not merely difficult, but impossible without the assistance of the standing officials; and in Mr. Bates I found not only an ardent follower of knowledge, but one of the most sagacious of men. He knew men as well as he knew the butterflies, to seek which he first made his acquaintance with the Amazons. He was a great reader of human nature, but he was more than that. We all of us in the course of our lives, I hope, have met many men who have commanded our respect, and also our regard: Mr. Bates was something more than that. It was impossible to associate with him without feeling not only regard, but personal affection."

Bates' *magnum opus*, 'The Naturalist on the River Amazons,' is known to all of us; its key-note is a profound love of nature, its mode of expression, simple truthfulness; that it should be permanently popular is a credit to our nation. Some have expressed a regret that, since his paper on Mimicry, he has favoured us with no further wide generalisations or ingenious suggestions. The reason of this is not perhaps far to seek. In one of his Presidential addresses to the Entomological Society he commented on the absence of generalisations from the works of descriptive entomologists, and attributed it in part to their knowing how immense is the work to be accomplished, and what comparatively small progress they have made with it. "Thus," he says, "our best working entomologists are led to abandon general views, both from lack of time to work them out, and the consciousness that general views on the relations of forms



and faunas are liable to become soon obsolete by the rapid growth of knowledge." Thus there can be little doubt that Bates restricted his own work of late years to descriptive Entomology, because he felt that it is at present the form of entomological work that has most permanent utility.

The portion of the vast order of Coleoptera that was most carefully scrutinised by Mr. Bates was doubtless the Carabidæ. After the completion of his volumes of the 'Biologia Centrali-Americana,' he devoted considerable time to the development of an improved classification of his favourite family, and we may be allowed to indulge the hope that, when his entomological papers are examined, this one may be found to be sufficiently far advanced to justify its publication.

Some few months ago he was attacked by an aggravated form of the gastric catarrh from which he had suffered for many years, and when he became the victim of an attack of influenza and bronchitis he speedily succumbed. It will be long before death takes another entomologist who will be so widely and sincerely regretted as Henry Walter Bates.

D. S.

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### HELLEBORE AS AN INSECTICIDE.

By W. W. SMITH.

REFERRING to the articles by Major Still and Miss Ormerod (Entom. xxiv. 290), on the use of hellebore in destroying the larvæ of *Nematus ribesii* and *Abraxas grossulariata*, I may add the results of experiments with the powder in checking the ravages of injurious insects in New Zealand. Judging from Miss Ormerod's remarks, I was somewhat surprised to learn that so little was known of hellebore used in solution as an insecticide. I have used it successfully for twelve years in the manner advised by Major Still, and it is used annually by many orchardists in the South Island for destroying the larvæ of *Tenthredo* (*Selandria*) *cerasi*. I use it in the proportion of half an ounce to a bucket of water. When I notice the newly-hatched larvæ on the leaves, I carefully and effectually syringe the trees with the solution, choosing a calm day for doing so. The larvæ are equally common on the cherry-, plum-, and pear-trees, and rapidly destroy their foliage if they are not checked or destroyed. One good syringing suffices, and, as Major Still remarks, it entails considerable labour when the orchard to be syringed is a large one; but the owner is well repaid for both time and money spent on the work. By syringing the trees early the imago sawfly is prevented from laying eggs further on the foliage, and by this course much labour is avoided. I do not go over the trees syringing a second time with pure water, as the particles of powder left adhering to

the foliage are invariably washed off by rains before any of the fruit ripens.

Another and cheaper method is to syringe with lime-water strained through "skrim," with a small quantity of hellebore added. The trees look a little unsightly until the lime is washed off by rains, but the expense of either article used is exceedingly trivial compared to the good results following. The lime solution with a teaspoonful of washing soda added to a bucket of water, and applied slightly tepid on calm days, will effectually clear apple-trees of the red spider (*Tetranychus telarius*) in twenty-four hours. This does not imply a sprinkling or mere wetting of the trees, but a thorough drenching in all cases. While the solution is dripping off the trees, we scatter a quantity of dry lime over the ground underneath them. This gives the finishing touch to all insects washed off the trees with the solution.

In perusing Miss Ormerod's latest edition of her 'Manual,' I am convinced that many, or most, of the remedies recommended to be used against injurious insects, &c., would be thoroughly effective if only applied in a practical manner. It often occurs that men and boys are left to prepare and apply insecticides, and on that account we frequently hear of their failure in destroying the pests. But so long as the work is done in an indifferent, slovenly manner, so long will the labours of practical economic entomologists be of little avail.

In addition to several introduced injurious insects, many indigenous species are becoming serious pests, and already we have three distinct Tortrices attacking the apricot, plum, grape-vine, and gooseberry bushes. The two former attack both foliage and fruit, eating through the fine shanks of the bunches of grapes, and causing them to drop on to the floor. A simple method of destroying these larvæ on gooseberry bushes is the solution recommended by Major Still, or the one I use myself. But, to people who may object to use either of them, I may mention that slaked or unslaked lime scattered under the bushes and the latter carefully shaken, and the lime afterwards moistened with a syringe, or fine watering-pot, will clear the bushes of great numbers of larvæ. A careful man applying any of these remedies would do a considerable amount in a day, and the labour and expense would soon be realised in the improved health of the trees, and quality of the fruit.

The whole matter of dealing with garden and agricultural pests requires a vigorous application of the remedies recommended. When such is *soundly* practised the labours of specialists in this the most important branch of Entomology will confer lasting benefits on the community.



## NOTES ON LEPIDOPTERA TAKEN IN 1891.

BY REV. O. PICKARD-CAMBRIDGE, M.A., F.R.S., &amp;c.

THESE notes on our captures of last season, although rather late in the day, may perhaps still be acceptable. The following list contains not by any means all, but for the most part only the better species met with; and, unless specially noted otherwise, all were taken at or near Bloxworth. The Macros were almost a dead letter. I have never known a season in which the larger moths and the Diurni were so scarce. Sugar, on the few nights it was used, produced nothing; hardly even a *Triphæna pronuba*. Two *Plusia gamma* only were seen, hardly any *Epinephele ianira* even, and but two or three *Cynthia cardui*. As an exception, however, *Pararge megæra* was unusually abundant, and for the first time for over thirty years I saw two *Hipparchia ægeria*. This butterfly used to be abundant, frequenting most of our wood and coppice rides and shrubberies; but, until this year, it has long been vainly searched for. The two seen were in a lane, far away from any woodland. *Argynnis paphia* was also more abundant here than usual.

*Callimorpha dominula*. Abundant in a few acres of fen-land, covered with patches of tall reeds, enormous tussocks of bog-grasses, and scattered bushes of birch, buckthorn, and alder. The sight of hundreds of this brilliant moth flying in bright sunshine was worth a day's march to see. I can imagine some spots in a tropical region might be not unlike it.

*Drepana hamula*. One or two from oak.

*Schrankia turfosalis*. In great abundance on the heath bogs, and in the fen mentioned above.

*Cleora glabraria*. One, beat from apple; the first recorded occurrence of this moth in Dorsetshire.

*Emmelesia unifasciata*. One specimen.

*Macaria alternata*. One beat from sallow.

*Tanagra atrata*. Fairly abundant on one evening only. Forty years ago it used to be tolerably common, but I have only seen one or two, until this last season, for many years past.

*Asthena luteata*. Generally a very scarce insect in this district, but last season not uncommon in one lane.

*Cryptoblabes bistriga*. One on oak.

*Titula semifasciana*. Several, among sallow and alder bushes in a swamp.

*Sciaphila sinuana*. Two examples only.

*Eupacilia rupicola*. Frequent.

*E. pallidana*. Scarce; near Wareham.

*E. geyeriana*. Much scarcer than last season. On the chance of breeding it, I gathered a quantity of marsh lousewort, *Pedicularia palustris*, growing on the spot where the moth occurs, and from this it was bred by both Mr. Eustace Bankes and Mr. N. M. Richardson, but a portion reserved for myself failed to produce the moth. This was, I believe, the first occasion of its having ever been bred.

*Argyrolepis sub-baumanniana*. A few, in one small locality only.

*Xysmatodoma argentimaculella*. One specimen.

*Tinea bistrigella*. Frequent among birch.

*T. albipunctella*. Several in widely separated and totally different kinds of locality.

*T. arcella*. Frequent.

*Adela fibulella*. Abundant.

*Cerostoma vittella*. Two examples.

*C. sylvella*. One example only. Usually this is an abundant species.

*C. alpella*. Occasional; in some seasons rather frequent.

*C. lucella*. Four specimens; all beaten from the same oak-bush which has furnished fewer or more for several past years. I have never taken more than three or four away from this bush, and these were at no great distance.

*Psoricoptera gibbosella*. A few only.

*Gelechia albiceps*. One specimen.

*G. tricolorella*. A few in one lane only.

*G. maculea*. Several, in the same lane.

*Cleodora cytisella*. A few, among fern.

*Ecophora flavifrontella*. Two beat from oak.

*Glyphipteryx schoenicolella*. Bred freely in August from seed-heads of rushes (*Schœnus nigricans*).

*Tinagma betulæ*. Abundant in June, July, and beginning of August, among birch-bushes. Numerous traces of this moth were found in birch-leaves in the previous autumn. During this last autumn, however, I have, on the same ground, and searching equally closely, not seen more than half-a-dozen leaves with the characteristic oval piece cut out; hence I suspect the perfect insect will be correspondingly scarce next season.

*Gracilaria elongella*. One from alder.

*G. semifascia*. One only.

*G. phasianipenella*, var. *quadruplella*. I captured thirty on the heath near Wareham, and every one was of the above variety.

*Coleophora palliatella*. Several of the curious larva-cases on oak, and two or three of the perfect insect.

*Laverna propinquella*. In damp woods and swamps.

*L. lacteella*. In the same localities as the preceding. Query—Is this really distinct from the preceding?

*L. rhamniella*. Several, among buckthorn (*R. frangula*) in a swamp.

*Chrysoclista schrankella*. Abundant in May. The late summer brood scarce.

*Stephensia brunnichella*. One, June 29th, just emerged from the pupa, and sitting on the leaf of a low plant. This is the first recorded capture of the perfect insect in Dorsetshire. Mr. N. M. Richardson subsequently met with the mines of this species at Whatcombe, Dorset.

*Elachista gleichenella*. Frequent.

*E. monticola*. Frequent. I understand that this is now ascertained to be identical with *E. poæ*!

*E. paludum*. Pretty frequent from June 18th to September, in a swamp.



*Lithocolletis anderida*. Eight specimens bred in May from birch-mines gathered in November preceding.

*L. ulmifoliella*. The above 8 *anderida*, and 150 of the present species, bred from 630 mines in birch-leaves. Swarms of ichneumons issued from the remainder. There does not appear to be any reliable external character by which to separate the mines of this and the preceding species, notwithstanding the great distinctness of their respective perfect insects.

*L. lantanella*. From 227 mines in leaves of *Viburnum lantana* I bred 18 moths and 130 ichneumons. The rest were mostly empty mines. No wonder this insect is rare (in my own experience, at least) in the perfect state.

*Cemiostoma lotella*. Bred freely from mines in leaves of *Lotus major* by the road-side, but very local, being confined to a space of less than 100 yards.

*Bucculatrix cidariella*. One specimen.

*B. frangulella*. Abundant on buckthorn (*R. frangula*).

*Nepticula centrifoliella*. Bred from mines found on sweet briar at Portland.

*N. æneofasciella*. Bred freely from mines in leaves of wild strawberry gathered in November preceding.

*N. acetosæ*. Bred from mines in leaves of *Rumex acetosella* found in Portland.

*Bohemannia quadrimaculella*. Five specimens brushed from alder.

*Trifurcula atrifrontella*. One beat from oak, in the same locality as the specimen recorded last year.

*Aciptilia paludum*. The evenings in August last were so unfavourable in point of weather that it was impossible to work for this little plume; one specimen only was taken.

Bloxworth, Dorset, February, 1892.

## "ASSEMBLING" IN LEPIDOPTERA.

By HENRY D. SYKES.

In the 'Entomologist' for 1891 (xxiv. 99), Mr. Perry Coste asks for a complete catalogue of all the species in which "assembling" has been observed. It seems to me that such a catalogue would be very useful for reference, and I think it would be a good idea for the correspondents of this magazine to record such species as have either come under their personal notice or that they have seen recorded occasionally in entomological books or periodicals, more especially as no such list appears to have been hitherto published.

The list of "assembling" species given below is not in any way intended as an exhaustive catalogue, but merely as a basis for the formation, and with a view to the compilation, of such a catalogue. It will be seen that, in my short list of seventeen species, each of the four great groups of the Macro-Lepidoptera

is represented, and so Mr. Perry Coste's query as to whether "assembling" has been observed in any of the Noctuæ or Sphinges can be answered in the affirmative. Indeed, this habit of the "assembling" of male Heterocera round the virgin female (so far from being confined to the *Bombyx* group) is not apparently confined even to the Macro-Lepidoptera; for the Editor recorded some years back (Entom. xxi. 320) a most unmistakable instance of it in *Tortrix podana*.\*

A complete catalogue of "assembling" species would, I think, be useful in two ways: *firstly*, when a collector breeds or otherwise obtains a freshly-emerged female of any species, he could refer to the catalogue to see if it was recorded as being attractive in this way; and, *secondly*, it could be used as a sort of guide to go by in trying "assembling" with other species, as it will be seen that in several cases two or more closely allied species can be taken in this way. For instance, the female of *Brephos parthenias* has lately been recorded as attracting males, therefore it is only natural to suppose that females of *B. notha* would be equally attractive. It does not seem, however, that this is always, or even usually, the case, as I can find no record of *Bombyx neustria* having been taken by "assembling," although so many of its allies are taken in this way; however, it is too early to discuss this question yet, for it will be seen what further species are recorded in the next few numbers of the 'Entomologist.'

The only list of "assembling" species of any length which I could find in the handbooks on collecting at my disposal was in Knagg's 'Lepidopterist's Guide.' The great objection to this list is its extreme vagueness, for it does not enumerate species, but simply alludes to families or genera as if all the species included in them would "assemble," which remains to be proved. After mentioning such well-known examples as *Endromis versicolor*, *Saturnia pavonia*, and *Bombyx quercus*, the 'Guide' goes on to say:—"Most other female Bombyces are attractive in their way; the Swifts, the Liparidæ, *Lasiocampa*, *Limocodes*, as well as the *Smerinthis*, the *Sesiæ*, the Prominents, Hook-tips, several Geometræ, the Psychidæ, &c., are well known." I do not know whether or not it is because insects belonging to the genera *Noto-donta*, *Drepana*, *Psyche*, &c., are so well known as "assemblers," but I can find no records of their capture by this method in any of the books or magazines I have consulted. Stainton's 'Manual' also says:—"This mode of enticing specimens . . . may be satisfactorily tried with many of the Liparidæ and Chelonidæ."

The following passage from Knagg's 'Guide,' which comes immediately after the one above quoted, is perhaps worth noticing:—"Probably all moths of the sex are so [attractive] in some degree, for we notice an indisposition for flight in the unimpregnated female to such an extent that one captured on the

\* Also of *Endopisa nigricana*, Entom. xiii. 40.—ED.



wing is pretty sure to be on the errand of ovipositing; with the exception, of course, of such autumnal species as do not pair till spring."

The following is the list I have compiled. I have given references in all cases where they seemed necessary, but have not troubled to give more than one reference in any case:—

SPHINGES.—*Smerinthus tiliæ*, Entom. xxi. 273; *Sesia sphegiformis*, Entom. xxv. 22; *S. culiciformis*, Entom. xxv. 22.

BOMBYCES.—*Emydia cribrum*, Entom. xxiv. 20; *Heterogenea limacodes* (*Limacodes testudo*), Knagg's 'Guide'; *Dasychira pudibunda*, Knagg's 'Guide'; *Orgyia antiqua*; *Bombyx rubi*; *B. quercus*; *B. trifolii*, Stainton's 'Manual'; *Endromis versicolor*; *Saturnia pavonia* (*carpini*); *Dicranura vinula*, Entom. xxii. 281; *Stauropus fagi*, Entom. xx.

NOCTUÆ.—*Miana furuncula*, Entom. xxi. 232; *Brephos parthenias*, Entom. xxiv. 123.

GEOMETRÆ.—*Amphidasys strataria* (*prodromaria*), Entom. Record, vol. i.

The Cedars, Enfield, March 8, 1892.

## NOTES ON BRITISH LEPIDOPTERA.

By RICHARD SOUTH.

### THE GENUS MELANIPPE.

THIS genus was founded by Duponchel in 1830 (Hist. Nat. Lep. Fr. viii. pt. i. p. 277) for the reception of eight species, which he separated into two divisions as follows:—

Without discoidal spot: *Marginata*, *hastata*, *luctuata* [not British], *turbaria*, and *rivulata* [= *alchemillata*].

With discoidal spot: *Tristata*, *alchemillata* [= *sociata*], and *rivata*.

*Marginata* is now placed in Hübner's genus *Lomaspilis*; *rivulata* in Stephens's *Emmelesia*; and *turbaria*, which is synonymous with *turbata*, Hübn., appears to have some affinities with *Larentia olivata*, but it does not concern us, as it is not British. The *turbaria* of Stephens and Wood is a form of *affinitata*.

Stephens, in 1831 (Ill. Brit. Entom. Haust. iii. p. 220), placed *galiata*, *tristata*, *subtristata* (*sociata*), *sylvaticata* (*rivata*), *unangulata*, with *picata*, *silaceata*, *fulvata*, &c., in his genus *Harpalyce*; whilst *montanata* and *fluctuata*, preceded by *olivata* and followed by *propugnata*, were included by him in *Cidaria*, and *procellata* in *Xerene*; *hastata* being the only representative of *Melanippe* in his arrangement.

Of the five remaining species of the eight originally included

by Duponchel in *Melanippe*, only four are British, and to these Stainton, Doubleday, &c., have added five others, viz., *procellata*, *montanata*, *galiata*, *fluctuata*, and *unangulata*. The last-named was only enumerated by Duponchel in the appendix to his catalogue, where it is placed in Stephens's genus *Harpalyce*, but the other four were included by him in his genus *Melanthia*, together with *albicilata*, *adustata*, *rubiginata*, *ocellata*, and *blandidata*.

The nine species now placed in the genus *Melanippe* of our lists have certain superficial characters in common, which permit of their being grouped together, and the sequence of arrangement originated by others and adopted by me in the 'Entomologist Synonymic List' appears to be a natural one. If, however, we examine the structure of the respective species, we shall find that the group is not homogeneous. The males of *montanata* and *fluctuata* have pectinated antennæ, and these species agree in this respect with those we include in the genus *Coremia*; they would, however, be aberrant members of that group, as they certainly are of *Melanippe*. *Procellata* seems to be out of place, and *galiata* does not agree with either *montanata* or *fluctuata*. It is not my purpose, however, to discuss the generic affinities of the species, but to refer to their variation, &c., which I will now proceed to do.

#### MELANIPPE HASTATA.

The ground colour is generally pure white, but sometimes cream-coloured; it is, however, in the central and basal black markings of this species that we find the greatest amount of variation.

In the more or less typical form the basal fourth of fore wing is usually black, and equally divided in two sections by a white band or line; both portions are often marked with white, and in some cases the outer one is broken up by white longitudinal streaks. The central band is sometimes continuous from costa to inner margin, with a transverse whitish dash below the middle; in other specimens the costal and inner portions of the band are alone present, and these are much broken by white markings. The white ground colour beyond the central band is sometimes intersected by a line of black spots. The hind wings have the basal third black, and this is, according to the character of the central band on fore wings, either much broken up by white markings, or simply divided into two parts by a transverse white line; the portion nearest the base with a white streak. The black outer marginal border of all the wings is often broad, almost completely divided in the middle by an arrow-shaped projection of the ground colour, and traversed by a white sub-marginal line, which, however, is rarely complete, but generally



represented at the apex and inner angle of the fore wings and anal angle of the hind wings.

A pretty little form of *hastata*, which appears to be referable to var. *hastulata*, Nolk., is found in the Outer Hebrides. Referring to specimens from Lewis, Mr. Weir (Entom. xiv. p. 221) says they "are more strongly marked with black, and in some the upper wings have the ground colour of a very pale yellow." I have several Lewis specimens; one of them is white, the fore wings marked with black as follows:—A patch at the base; central band indicated by two dashes on costa, some spots and dots before the middle, and two dashes on inner margin; these remnants of the band are preceded and followed by a transverse row of black spots; submarginal band narrow, interrupted at the middle; marginal band narrow. Hind wings with some spots and dashes at the base, a central transverse row of dots, submarginal and marginal bands as on fore wings.

Another specimen is black, with the following transverse white markings:—Fore wings: a slender basal line; narrow, subbasal, and broader central bands traversed by black dots; submarginal line interrupted above and below the middle. Hind wings with a central band intersected by a line of black points, a triangular mark on marginal area, connected with central band by a narrow line, and three dots between it and anal angle. A third specimen is black; the fore wings have two slender white lines traversing the basal area; subbasal band ill-defined towards inner margin, and containing two black dots in its upper portion; central band with a deep outward angulation, indistinct towards inner margin, and intersected by an interrupted black line; submarginal line rather broad and serrated before inner margin. Hind wings traversed by four white lines, but the first and fourth do not reach the costa. This specimen is very similar to that figured by Newman; a form said to occur in the North of England and Scotland.

Mr. McArthur informs me that the larva of the Lewis form of *hastata* feeds on *Myrica gale*, and that the moth rests on the rocks.

An interesting aberration of *hastata*, taken near Doncaster, is figured Entom. xiv. p. 1. This specimen is very small, and the central band is quite absent, but the discoidal spot remains.

#### MELANIPPE TRISTATA, L.

This species usually has the ground colour fuliginous brown, but some specimens I have from Glasgow and Durham are grey-brown, tinged with ochreous; others from Barnsley are decidedly black. The central fascia of fore wings is sometimes contracted below the middle; in two specimens from Durham it is very slender at this point, and in a third example from same

locality the band is completely severed, but the portions are connected by a faint cloud. There is usually a round black spot encircled with white in the upper part of the fascia; this sometimes is considerably enlarged, and then assumes the shape of the reniform stigma seen in the Noctuæ. The dark outer area of the wing is generally intersected by a wavy white line, and sometimes divided longitudinally by a projection from the white band which immediately precedes it.

Although the white transverse bands are, as a rule, intersected by a line of black dots, each dot placed on a nervule, some specimens are entirely without such punctiform markings.

The dark colour of the hind wings is always transversely divided into two portions by a white central band, with line of dots subject to same modification as on fore wings, but the white lines which traverse the basal half are sometimes so diffuse that they almost completely eliminate the dark colour. The white line which traverses the outer marginal area forms a sagittate mark about the middle, and this is often connected with the white band by a projection from the latter.

The foregoing remarks apply to what may be termed the ordinary variation of the species, but I have two other specimens from Durham which are so peculiar that it seemed better to refer to them separately. In these examples the upper portion of the central fascia on fore wings is interrupted as far as the white line by rays from the outer white band, and the basal half of hind wings, which is traversed by broad white bands, is radiated in a similar way.

*Luctuata*, Hübn., which occurs in Germany, Hungary, Switzerland, and Livonia, is usually considered specifically distinct from *tristata*, Linn., but some specimens of the latter species from the North of England appear to be much nearer to *luctuata* than to typical *tristata*. The only difference that I can find is that in *luctuata* the black central fascia of fore wings is continued across the hind wings, and the white band beyond appears to be more angulated. Perhaps examples of a larger number of northern specimens of *tristata* than I possess might result in the detection of specimens identical with *luctuata*. Newman's figure of *tristata* is far more like *luctuata*. If *luctuata*, Hübn., proves to be a form of *tristata*, Linn., then a very complicated bit of synonymy will be cleared away, and we shall have *luctuata*, Hübn. (No. 2), Btr. ii. 4, 3 t; Geom. pl. 49, fig. 253, for the species now known as *lugubrata*, Staud.; whilst *luctuata*, Hübn. (No. 1), Btr. i. 1, iv. x (= *tristata*, Hübn. Geom. pl. 49, fig. 254), will be merged in *tristata*, Linn.

The fact of Hübner figuring his *luctuata* (No. 1) at a later date under the name of *tristata* seems rather to indicate a desire on his part to sink the former name.



## MELANIPPE PROCELLATÁ.

Except that the ground colour is sometimes slightly tinged with greyish brown, and that the fine wavy dark transverse lines are subject to modification in the direction of evanescence on the one hand, and great prominence on the other, there is no variation that I am aware of in British *procellata*.

Japanese specimens are usually much suffused with greyish or brownish; some examples are uniform fuliginous-brown, whilst others are quite of the typical English form. Mr. Leech has a German specimen in his collection which is very like the common Japanese form.

## MELANIPPE UNANGULATA.

Appears to be a fairly constant species. The central fascia varies a little in width, and also in the angulation of its outer edge; the outer edge of the white band following the fascia is not always clearly defined.

This species may be distinguished from either *M. rivata* or *M. sociata*, its closest allies, by the more silky texture of the wings, and by the more angulated external outline of the central fascia. The hind wings are whiter, and the white line which intersects the brownish grey outer marginal area is much more wavy.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 65.)

BAGADA, *Walk.*

*Bagada plumbata*.

*Acontia plumbata*, Butler, Ill. Typ. Lep. Het. vii. p. 61, pl. cxxix. fig. 4 (1889).

*Marimatha freda*, Swinhoe, Trans. Ent. Soc. 1891, p. 147, n. 27.

Dharmasala and Nilgiris. Types in Coll. B. M.

*Bagada spicea*.

*Perigea spicea*, Guenée, Noct. i. p. 226, n. 358 (1856).

*Acontia firina*, Swinhoe, Proc. Zool. Soc. 1885, p. 455, pl. 27, fig. 5.

Java, Bombay, Poona, Nilgiris. Types in Coll. B. M.

It is an unusual occurrence for *M. Guenée* to be so wide of the mark as in the present instance, and it is not surprising

that Col. Swinhoe should have overlooked an Acontiid when described as a *Perigea*. As we have both types there can be no question as to the identity of the species united above.

*PSEUDOMICRA*, gen. nov.

*Pseudomicra marginalis*.

*Anthophila marginalis*, Walker, Lep. Het. Suppl. 3, p. 802 (1865).

*Rhodaria formosalis*, Walker, l. c., 4, p. 1284 (1865).

Australia. Types in Coll. B. M.

*Pseudomicra semipurpurea*.

*Anthophila semipurpurea*, Walker, Lep. Het. Suppl. 3, p. 803 (1865).

*Marimatha confinisalis*, Walker, l. c., 4, p. 1206 (1865).

*Xanthoptera rosalba*, Grote (see *Prothymia*, Check List, p. 38, n. 1094).

North America. Types in Coll. B. M.

My *Rhodaria amata* from Japan is an allied but quite distinct species. The type of *Prothymia* is certainly not congeneric with these species. It is altogether more robust, with thick curved palpi and coarsely ciliated antennæ.

*FRUVA*, Grote.

*Fruva parvula*.

*Xanthodes parvula*, Walker, Lep. Het. Suppl. 3, p. 779 (1865).

*Fruva georgica*, Grote (see Check List, p. 38, n. 1086).

United States. Types in Coll. B. M.

*AGROPHILA*, Guen.

*Agrophila sulphuralis*.

*Phalæna-Pyralis sulphuralis*, Bergstrasser, Ins. Suec. i. p. 10.

*Erastria pardalina*, Walker, Lep. Het. Suppl. 3, p. 794 (1865).

Europe, Asia, and Mauritius. Coll. B. M.

It is a singular thing, seeing how variable this species is, that Walker should have selected a typical example of *A. sulphuralis* for his new species.

*EUBLEMMIDÆ*.

THE type of *Thalpochares* is evidently *T. inamæna* = *arcuinna*, which is typical *Microphysa*, Boisd.; even the other species subsequently mentioned by Lederer cannot stand under his name. Herrich-Schäffer adopted for them the generic name *Trothisa*, Hübn., and Lederer's argument that the latter genus only contained two species (the near affinity of which, by the way, nobody disputes) only tells against himself, since the addition of species to a genus does not constitute it one's own property. Unfortunately



Hübner himself annihilated *Trothisa* by founding *Eublemma*, *Porphyrinia* and *Eromene* before it. *Eublemma* contains two species, — *E. suava*, which is a *Microthysa*, and *E. amæna* = *respersa*, which becomes the type; the latter is congeneric with *Trothisa paula*, so that *Eublemma* stands for the bulk of Lederer's *Thalpocharides*. Even if *Eublemma*, *Porphyrinia*, *Eromene* and *Trothisa* had all been superseded, there would still remain *Ecthetis*, Hübn., with the sole species (and therefore type) *E. pura*, which must have taken priority over Lederer's genus *Thalpochares*.

If it be asserted that some of Hübner's genera contain heterogeneous material, and therefore that his names should be ignored, I reply that Lederer's are in the same plight; even *Thalpochares* itself contains several structurally distinct groups having entirely different facies. I cannot admit the confusion of such well-marked groups as *Microphysa*, *Eublemma*, *Calymma*, *Glaphyra*, &c.

*Acantholipes*, Led., is synonymous with *Docela*, Walk., which it supersedes.

*Thalpochares innocens*, Butl., is apparently a Deltoid allied to *Mestleta*; the somewhat longer palpi indicate this.

Herr Saalmüller, in his 'Lepidoptera von Madagascar,' has described three species as belonging to *Anthophila*, which, in their neuration, are shown to be species of *Tarache*, viz., *A. divisa* (Taf. xiii. f. 234), *A. scapha* (f. 236), and *A. armilla* (f. 238), which have a very well-defined accessory cell to the primaries — a character which, as my friend Mr. Hampson has proved to me, is entirely wanting in the Eublemmidæ. The singular thing is that Saalmüller, when describing *Anthophila*, observes that the species, which have a very different character from one another, are principally distinguished by the want of the accessory cell and approximated arrangement of veins; either he did not use a sufficiently powerful lens, or his sight must have been defective, since the accessory cell in these species is unusually large.

In the male of *Anchiroe flavofimbria*, Saalm., which has entirely yellow secondaries, I can find nothing in the neuration to justify its separation from *Tarache*; the character of the veins of the secondaries is perfectly normal, the second and third median branches being emitted as usual from a well-defined footstalk; that of the primaries is equally so, the accessory cell being long and well marked, differing in no respect from that of the other Madagascar species referred to above: the slight differences of pattern in the sexes are such as one expects to find in species of *Tarache*.

*Erastria elegans*, Saalm., is a *Bryophila*: the tufted body and trifold median neuration of secondaries would alone separate it from *Erastria*; the drawing of the veins in his figure is incorrect. *E. muscosa*, Saalm., is also a *Bryophila*.

*Erastria latireptana* = *Miana semicana*, Walk., from the United States, has the characters of a *Bryophila*.

*Erastria punctifera*, Walk., described from a headless example, is an *Orgyia*, or a closely allied genus of *Liparidæ*.

*Acantholipes acervalis*, Swinh., is one of the "*Trifidæ*," and must be referred to *Pradatta* (*Heliothidæ*).

*Thalpochares argentifrons*, Butl., *T. triangularis*, Warr., *Eustrotia dividua*, Grote, and *Bankia opella*, Swinh., are nearly allied species, and should, in my opinion, form a new genus of *Acontiidæ*: they do not belong to the *Eublemmidæ*, though outwardly resembling them, as the primaries have a distinct, though short, accessory cell. All of the species have the basal area of the primaries terminated by a straight transverse line; the genus comes nearest to *Eulocastra*: it may be called *Orthostrophia*.

*Thalpochares grisea*, Ersch. (also labelled *T. pallidula* and *aruta* by Zeller, though it has nothing in common with Herrich-Schäffer's species), and *T. himmighoffeni*, Mill., are narrow-winged species, having straight porrected palpi with very short terminal joint: they may be called *Leucoblemma*.

(To be continued.)

## ENTOMOLOGICAL NOTES, CAPTURES, &c.

BARBAROUS LATINITY.—Why should we entomologists incur the ridicule of classical scholars, not to say average schoolboys, by the astounding names we give to our insects? There is a case in point (for which, however, you are not responsible) in *Entom.* xxv., page 35, where occurs the word *Thulei*. What in the wide world is *Thulei*? Am I wrong in assuming that it is meant for the genitive case of Thule, since "*Ultima Thule*" is the accepted Latin for Shetland, and the insect in question comes from there? If this be so, then may not we English entomologists at any rate cease to run the risk of raising the ghost of Cicero by our barbarous Latinity, and, by way of a beginning, adopt for our moth the proper genitive of its locality, which is *Thules*?—W. CLAXTON; Winchfield, Feb. 6, 1892.

[Some months ago this name was referred to at a meeting of the South London Entomological and N. H. Society, and Mr. Jenner Weir then pointed out that the proper genitive was *Thules* and not *Thulei*.—ED.]

GREEN AND BROWN PUPE OF *PAPILIO*.—The observations recorded by Mr. J. L. Bonhote (*Entom.* 44) are decidedly of interest, though the same sort of thing has been reported before (see *Entom.* xxiii. 226). If it is really a fact that certain species having both green and brown pupæ behave in this way, the green emerging the same year and the brown wintering, it surely throws light on this often discussed form of dimorphism. During the summer both sorts, but especially the green, may be sufficiently protected by the foliage, but in winter the green variety would be very conspicuous. Thus there is obviously some advantage in the early emergence



of the green variety, and natural selection may be brought to bear. Nevertheless, from what we know of the numerous similar dimorphic forms which cannot be thus accounted for, and from the recorded facts about the effect of surroundings on colour, the problem becomes quite complex. The purpose of this note is simply to call attention to an interesting problem, and to ask for further information.—T. D. A. COCKERELL; Institute of Jamaica, Kingston, Jamaica, Feb. 20, 1892.

HADENA SATURA IN THE FAR NORTH.—I can assure Mr. Hodgkinson that he is quite wrong in his deductions regarding this matter (Entom. 16). The whole life-history of the Aberdeenshire *H. satura* is well known to quite a number of English entomologists; but as there seems to be a difficulty in making out whether they are really *H. satura* or a form of *Crymodes exulis*, it was thought best not to publish anything about the insects until it was definitely known what they really were. The party who sent Mr. Hodgkinson a boxful of continental insects is not the party who discovered the insects referred to above.—WM. REID; Pitcaple, Aberdeenshire, March 10, 1892.

CATOCALA NUPTA AT REST.—I venture to doubt whether *Catocala nupta* has the preference for concrete walls Mr. H. D. Sykes ascribes to it (Entom. 69). It is plentiful in this neighbourhood (Beckenham), and in the latter half of August and in September it is commonly found on the oak fences that enclose the gardens, or on any flat surface. I have taken three specimens on the smooth and rather bright red brickwork of my house, on which it appeared very conspicuously. It generally appears about the 10th of August, and becomes worn by the middle of September. I have never seen it here in October. It comes freely to sugar, and last year, when it was unusually plentiful, three or four were attracted on each occasion on which I sugared in my garden. I have not found the difficulty Mr. Sykes mentions in boxing this insect; so long as no shadow falls on it, it will sit quietly enough, but, like the rest of the genus, it is very alert when once aroused.—F. W. BIDDLE; Lanberne, Beckenham.

REARING LARVÆ OF NOTODONTA DICTÆOIDES.—That the larvæ of the genus *Notodonta* are frequently cannibals is certain, and *N. dictæoides* is no exception. Of this anyone may convince himself by leaving one large and several smaller ones together in a sleeve. As they feed at night the process is not so easily witnessed, but the small ones will rapidly disappear. It is probably while changing the skin that most larvæ are thus carried off. Having been more successful than Mr. Meed with this larva, I venture to suggest a few points to be observed. It is desirable to feed on the growing tree, and to allow the larvæ room. I would not place more than twenty ova in one sleeve, for the mischief begins early. As the eggs turn from white to a dark leaden colour before hatching, I would only expose them when they have turned colour. If any larvæ grow larger than the rest, at once remove them to a separate sleeve. They prefer the shady side of the tree. Cannibalism seems developed by sunshine and dry weather. My best trees for rearing larvæ upon are planted in the shade, under a north wall. When full fed the larva will throw itself off its food, and lie upon the muslin, somewhat contracted in length. At once remove these to cages prepared with three inches of light soil, not too dry, and they will bury, forming soft cocoons, if the brood is healthy; or else the pupæ will be naked. I have not found them to dry up, if kept in a tolerably moist

atmosphere and occasionally watered as the weather becomes warm. I once quoted the authority of a friend, in these pages, for saying that the larvæ sometimes fed on aspen; but this was afterwards explained to be spoken of *N. dictæa*, so I here retract the error. Birch, as far as I know, is the only food.—(Rev.) B. SMITH; Marlow, March 1, 1892.

RELAXING EXOTIC LEPIDOPTERA.—I should be much obliged for information as to the best method of relaxing Exotic Lepidoptera. I am supposing that they have been received in papers, and never set at all. Of course if they have been set, and the style is not approved, it is comparatively easy to remedy it. My *modus operandi* hitherto has been this: I fill a vegetable dish with sand, which I damp, and on this place the butterflies, sometimes making little furrows in the sand, in which I squeeze the bodies, with the idea that this damps and relaxes more effectually the muscles at the base of the wings. At other times I simply put the insects flat on the sand. I then cover the dish with the lid, and leave them. But I cannot say the proceeding is satisfactory, as, even after two or three days, such small species as the *Catagrammas* are seldom in a thoroughly relaxed condition, and the setting is a matter of much difficulty, often resulting in slit wings. Necessarily the time taken in relaxing an insect would vary with the size, and with the robustness of wing. What is considered a proper average time for the process? I suppose the specimens *can* be so entirely relaxed as to be set with no greater trouble than freshly-killed insects. I shall be grateful for a few directions from those experienced, instructing me as to the proper plan of effecting this.—JOSEPH ANDERSON, JUN.; Chichester.

QUERY RESPECTING GNATS.—Can anyone kindly inform me of the best means of protecting oneself in the field against gnats, or the most effectual means of reducing the swelling and irritation resulting from their bites?—W. HEWETT; 12, Howard Street, York.

CLEARWINGS IN NORTH STAFFORDSHIRE.—Mr. Woodforde last year bred three *Sesia sphegiformis* from alder and birch shoots, and many *S. bembeciformis* from willow shoots. The shoots were brought to him by the woodcutters, with the larvæ in them. He also took a second *S. culiciformis*, the first having been taken by him the previous year, when it was a record for this district. The only other Clearwings that we have so far taken in N. Staffordshire are *Macroglossa bombylifformis*, the common *S. tipuliformis* and *S. apiformis*.—(Rev.) T. W. DALTRY; Madeley Vicarage, Staffordshire.

NOTE ON SUGAR.—During the months of September, October and November sugar failed to attract even the commonest species, forming a remarkable contrast to the months of June, July and August, during which Noctuæ were most abundant at sugar.—W. HEWETT.

NOTES ON ITALIAN RHOPALOCERA.—On Sept. 12th, 1891, whilst picking the splendid *Hibiscus roseus* at Lago Massaccincoli, near Viareggio, I found *Polyommatus dispar* var. *rutilus* (Wer.) abundant, and it appeared in good condition until Oct. 1st. *Lycæna telicanus* (Hb.), very common at Bagni di Lucca, in dry torrent-beds, on flowers of *Epilobium dodonæi*; it is common also here. *Satyrus statilinus* (O.), numerous at Bagni di Lucca, Viareggio, and at Massa. *Charaxes jasius* (L.), at the mouth of the River Magna on Oct. 5th. *Lycæna cyllarus* (Rott.), in gorges at Carrara.—FRANK B. NORRIS; Massa, Carrara.



## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *February 24th, 1892.* — Mr. Frederick DuCane Godman, F.R.S., President, in the chair. The Secretary read a letter from General Sir Dighton Probyn, K.C.B., Comptroller to the Prince of Wales, conveying the thanks of the Prince and Princess of Wales for the Address of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded to Sir Dighton Probyn by the Secretary, on behalf of the Society. Mr. Walter Cuthbert Biddell, of 32, The Grove, Bolton Gardens, S.W.; and Mr. Douglas Stuart Stuart, of North Leigh, Prestwich, Lancashire, were elected Fellows; and Mr. Philip de la Garde, R.N., was admitted into the Society. The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening. Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg consisted of three distinct femora, tibiæ and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*. Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmecaria subcarinata*, Sm., and *Aphænogaster (messor) barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmecaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphænogaster barbarus* var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjab, the bee disfiguring the arches and roofs with its huge nests, and the ant frequenting the gardens and steps. The Hon. Walter Rothschild communicated a paper entitled "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing, by Mr. F. W. Frohawk, of the male, variety of the male, female, and under side of the species.

*March 9th.* — Mr. Frederick DuCane Godman, F.R.S., President, in the chair. Capt. Clement Alfred Rigby Browne, R.E., of Bombay; His Grace the Duke of Devonshire, LL.D., Chancellor of the University of Cambridge, of Devonshire House, 78, Piccadilly, W.; Mr. J. H. Leslie, of 44, Cheriton Square, Upper Tooting, S.W.; Mr. R. M. Lightfoot, of Bree Street, Cape Town, Cape of Good Hope; and Mr. Sidney Robinson, of Goldsmith's Hall, E.C., were elected Fellows of the Society. Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocalia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the undulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part. Mr. Elwes exhibited specimens of *Ribes aureum* which were covered with galls, as to the nature of which the

Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr. Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of Heterocera recently collected by Mr. Doherty in South-East Borneo and Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued. Mr. Barrett exhibited a series of specimens of *Noctua festiva*, bred by Mr. G. B. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type, and the variety formerly described as a distinct species under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens. Mr. W. C. Boyd exhibited a specimen of *Dianthecia barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. barrettii*—which had until recently been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall. Mr. Tutt exhibited specimens of *Polia xanthomista* from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb. They included, amongst others, a specimen much suffused with yellow, and resembling Hübner's type and Gregson's type of var. *statices*, which Mr. Tutt stated was practically identical with Treitschke's *nigro-cincta*. He remarked that certain localities appeared to produce different forms of this species, responding largely to their environment as far as colour is concerned, and were thus protected by resemblance to their surroundings. Mr. G. A. James Rothuey exhibited and read notes on a large collection of Indian ants which he had made in Bengal between 1872 and 1886, comprising some 90 species. He stated that 18 of these species had been described by Dr. Mayr in his paper entitled "Ameisen Fauna Asiens," 1878: he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about ten species and one new genus which Dr. Forel had not yet determined. Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places. Mr. Cockerell had pointed out, in a letter dated 16th February last, that the species is notable for the sharp division between the thorax and abdomen; and that he had formerly distributed it under the name of *Aspidiotus rufescens*, but had since satisfied himself that it was identical with *A. articulatus* from Demerara. He added that the species fed on a variety of plants, and was known from Demerara, Jamaica, and Barbados. Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an Introduction by himself, entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species." The Rev. A. E. Eaton communicated a paper entitled "On new Species of Ephemeridæ from the Tenasserim Valley."

March 23rd. — Dr. David Sharp, M.A., F.R.S., Vice-President, in the chair. The Hon. Mrs. W. Carpenter, of Kiplin, Northallerton, Yorkshire; and Mr. S. G. C. Russell, of 19, Lombard Street, E.C., were elected Fellows of the Society. The Secretary read a letter from the City of London Entomological and Natural History Society on the subject of a proposed Catalogue of the Fauna of the London District. The assistance of Fellows of the Society in the compilation of the Catalogue was asked



for. Mr. G. C. Champion exhibited a number of new species of Longicornia from Mexico and Central America, recently described by the late Mr. H. W. Bates, in his paper entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously recorded Species," read at the last meeting of the Society. Mr. S. Stevens exhibited three very rare species of Noctuæ, viz., *Noctua flammatra*, *Leucania vitellina*, and *Laphygma exigua*, all taken by Mr. H. Rogers at Freshwater, Isle of Wight, in the autumn of 1891. Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus* in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, originating from a single coxa, which he had shown at the meeting on the 24th of February last. The specimen was now reversed, to admit of the better examination of the structural peculiarities, upon which Dr. Sharp, Mr. Champion, and Mr. Jacoby made some remarks. Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of Hesperidæ. Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of Orthoptera recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by, Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher. Mr. J. W. Tutt exhibited and remarked on a series of various forms of *Orrhodia vaccinii* and *O. (spadicea) ligula*. Mr. C. G. Barrett exhibited and made remarks on a series of specimens—including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoria*. A long discussion ensued as to the probable causes of the variation exemplified, in which Mr. Tutt, Mr. E. B. Poulton, Mr. H. Goss, Mr. Jacoby, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part. Mr. G. A. James Rothney sent for exhibition a number of specimens of *Camponotus compressus*, *C. micans*, *Cecophila smaragdina*, *Sima rufo-nigra*, *Solenopsis geminata* var. *armata*, and other species of ants, from Calcutta; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled "Notes on certain species of Calcutta Ants and their habits of life."—H. Goss, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 25th, 1892.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. W. Larkin, of Streatham, and Mr. A. L. Stephens, of Blackheath, were elected members. Mr. Cooper exhibited some specimens of *Porthesia chrysorrhæa*, L., received some years ago from Whittlesea Mere, Cambridgeshire, and pointed out that there were a number of black dots on the wings. Mr. J. Jenner Weir exhibited examples of several species, showing the wet and dry season forms of the same insect, and remarked that it had now been placed beyond doubt that many species which were looked upon as perfectly distinct were wet season and dry season forms: among the species exhibited were *Junonia astoria*, L., *J. almana*, L., the wet season form of *Melanitis ismene*, Cram., and the dry season form of the same, *M. leda*; and Mr. Weir remarked that the two so-called species of *Melanitis* were seasonal varieties, or, as he termed it, horæomorphic of one species: this question had been set at rest by direct experiment. Mr. Weir contributed notes relative to his exhibit. Mr. R. Adkin exhibited Lepidoptera from the

Scilly Isles, and, in remarking on the variation, called attention to the specimens of *Pieris napi*, L., *Lycæna icarus*, Rott., and *Cidaria truncata*, Hufn., which he said were species known to be liable to somewhat pronounced local variation, and yet those he had received from Scilly were normal. Mr. Adkin also exhibited light and dark cocoons of *Eriogaster lanestris*, L., and contributed notes. Mr. Tugwell exhibited cocoons of *Nola centonalis*, Hb., and *N. albulalis*, Hb., and referred to some remarks recently made by Mr. Tutt, that the coloration of cocoons was caused by anal excreta. Mr. Tugwell stated that he did not agree with this view. A discussion followed relative to these two last exhibits, in which Messrs. Jenner Weir, C. Fenn, W. West, South, C. G. Barrett, Carrington, Tugwell, and Adkin took part. It was pointed out that recent experiments had shown that the coloration was due to renal excreta. Mr. Billups exhibited specimens of minute Mollusca, and read notes thereon.

*March 10th.*—The President in the chair.—Mr. Jenner Weir exhibited xanthous forms of the following British Rhopalocera, viz., *Satyrus semele* (female), *Epinephele ianira* (female), *E. hyperanthes* (female), *Cænonympha typhon* (male), *C. pamphilus* (female, three specimens), and *Heodes phlæas* (male). These specimens were all of them much paler in colour than usual, and he regretted that he could not suggest a cause for this want of colour, except in the case of *E. ianira*; this insect he had taken in the New Forest, during the very wet and cold season of 1879, in a damp wood; the temperature was then so low that when *Argynnis paphia* was pursued it took refuge in the thick brambles, being too weak to fly far, and *Brenthis euphrosyne* had its emergence delayed through July—in some cases even till so late as the 9th of August. His view was that the development of pigment was due to what might almost be termed surplus energy, and that, if the vitality of either of the larva or chrysalis was lowered by unfavorable environment, then the result might be that the imago might be defective in colour. Applying this argument to the *E. ianira* under consideration, he was of opinion that in the chrysalis its vitality had been impaired, and the energy necessary to produce the normal colour had not been forthcoming. Mr. H. C. Richter then delivered a lecture on Insects, illustrated by original diagrams and coloured drawings, the majority of the latter being enlargements of the objects as seen through the microscope, and Mr. Richter stated that many of them had not hitherto been figured. Owing to this paper the remaining exhibits were not taken, and the discussion on Mr Weir's paper stood over until the next meeting.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March 14th, 1892.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. H. Locke, of Birkenhead, and G. Norel Deville, of Crosby, were elected members. The President referred to the loss the Society, and naturalists generally, had sustained by the death of Francis Archer. Mr. William Webster, of St. Helen's, read a paper entitled "Was Shakspeare an Entomologist?" The author stated he had examined the works of the poet, and found 207 references to insects, and, as far as could be ascertained, mention of 30 kinds of insects; and showed, by numerous quotations, that Shakspeare not only possessed a fair knowledge of Entomology, but that he was a philosophical observer of Nature. Mr. Willoughby Gardner, F.R.G.S., read a short note on the "Popular names of Insects about Shakspeare's time," some few of which still existed in country places. Mr. Webster exhibited *Papilio zalmoxis*; the President, Messrs. Stott and



Harker, and the Hon. Secretary, long and variable series of *Noctua festiva* and *N. conflua*; and Messrs. Harker and Jones, British and Continental forms of *Lycæna icarus*.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — *March 14th, 1892.*—Rev. C. F. Thornehill in the chair. Mr. R. C. Bradley showed several species of *Culex*, taken at Sutton. Mr. G. T. Bethune-Baker, a boxful of *Scopariæ*, from St. Helena, which differed from all other *Scopariæ* in the possession of deeply serrated antennæ, some of the specimens being almost black. Mr. Baker said that, even from the mainland of Africa nearest to St. Helena, he knew of no *Scopariæ* with the same characteristics. Mr. G. H. Kenrick read a paper, "Some considerations on Insects confined to small areas." He touched chiefly upon self-evident causes of localisation, mountain-chains, &c., and then entered more fully into the causes of the presence on our coast-lines, in the fens, woods, &c., of many species only found in those restricted districts in our country, though found in similar ones on the Continent: he remarked that it was strange to find so many species restricted to so small an area as our fens, for example, and showed that those fens represent a very wide extent of country, all fen, extending over the German Sea, to and including Holland, and of which our Lincolnshire and Norfolk fens, and those in Holland, are all that is left: the insects inhabiting this wide extent of country are now, to a considerable extent, crowded into the few surviving spots, and hence we get many peculiar species in a small area: he believed the same applied to coast species, our coast-lines having once formed a part of a very much more extended continental coast-line; and to wood species, our woods being the remains of former extensive forests, &c. He concluded by pointing out many much more complicated questions of distribution and localisation, of which he could offer only slight explanations, and which, he said, opened out a wide and interesting field of study. A discussion followed, in which the Rev. C. F. Thornehill, and Messrs. G. T. Bethune-Baker, R. C. Bradley, and C. J. Wainwright joined.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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## OBITUARY.

With great regret we have to announce the death of FRANCIS ARCHER, who died Feb. 29th, 1892, after a week's illness, of diphtheria, at his residence, 21, Mulgrave Street, Liverpool, aged 52. He was the son of the late Francis Archer, M.R.C.S., a well-known medical practitioner in Liverpool, who was also a naturalist, his speciality being Conchology. Mr. Archer, who held a leading position in his profession, that of a solicitor in Liverpool, was a man of high culture and most genial disposition, an ardent politician, and a born naturalist. He was among the first to appreciate the late Mr. Darwin's views on the 'Origin of Species,' &c. He possessed a very practical knowledge of Conchology and Entomology, and was always ready to assist and encourage young people in their scientific and natural-history investigations. He was one of the original members of the Lancashire and Cheshire Entomological Society, in which he always took a deep interest, and he was elected a Fellow of the London Ent. Soc. in 1886. Those who knew him intimately will mourn a kind congenial friend, whilst Science has one less ardent follower in Liverpool.

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## NOTE ON GENERIC CHARACTERS IN THE NOCTUIDÆ.

BY JOHN B. SMITH.

IT will be admitted, I think, that there are no characters, structural or otherwise, that are of uniform systematic value in all the orders of insects. It will be further admitted, I think, that characters of the very highest value in one order, family, tribe, or genus, may be of scarcely specific importance in another. The question as to what characters are sufficient to authorize a genus will be decided by each student for himself, and much in accordance with habit and with the surroundings in which he is placed. It is not intended, therefore, to suggest anything like an arbitrary value for characters, but simply to discuss certain of them as to their relative importance and usefulness. A character is useful for large divisions in proportion to the amount of variation it undergoes, and in proportion as the changes are sharply defined. A seemingly unimportant character may by its constancy be of the highest systematic value. I instance, in the Coleoptera, the division of the large sub-family *Harpalinae*, into unisetosæ and bisetosæ, according as there are one or two supra-orbital setigerous punctures.

In the *Noctuidæ* one of the best characters for generic division is in the eyes—whether they are naked or clothed with short hair; a single hair arising at an angle of each facet. The character is absolute; there is never a doubt as to whether an eye is hairy or naked, and I have seen no intermediate forms. No species is known to me in which this character is variable, and no case is known to me where otherwise nearly-allied species are separated by this character. All *Leucania*, all *Tæniocampa*, and all *Mamestra*, for instance, have hairy eyes. Besides, the possession of hairy eyes seems to carry with it an absence of certain other characters. None of the hairy-eyed genera have the tibiæ spinose, and none have a heavy armature to the fore tibia. In some there is a short terminal spine, and there may be



a development of tarsal spines; but I do not know a case where hairy eyes and spinose tibiæ are combined. The character is a strictly structural one.

In some series of species, the eyes, while they are naked, are furnished at the lateral margins with a series of longer, overhanging hair or "lashes." This character is one that is largely associated with xylinoid forms, and has some value, in certain cases, to emphasize other structures. It is, however, subject to variation, and it sometimes becomes matter of opinion as to whether an eye is or is not lashed. The character is, therefore, a subordinate one. The shape of the eye itself is of considerable importance. Usually they are round and convex, hemispherical in appearance; but in many forms they become narrowed, and sometimes reniform. Examples are found in *Anarta* and in certain heliothid genera. The character is usually associated with a comparatively small, often retracted head, and with a coarse, divergent, sometimes hairy vestiture. The change from round to narrow or reniform is sometimes quite gradual; but the character is often useful for distinguishing genera otherwise ill-defined. The structure of the palpi is subject to great variation, and many of these are of generic importance.

In the Deltoid genera, for instance, the difference between forms like *Hypena* and forms like *Zanclognatha* or *Helia* is sufficiently marked to be made use of. The tongue in Noctuids is usually well developed, but occasional forms are found in which it is obsolete, or so small and weak as to be of no functional importance. This character is of generic value always, since it indicates a change in the entire nutritive system. It is usually accompanied by a reduction in size of head, and by feebly developed palpi. Quite frequently, too, the antennæ will be remarkably well developed or strongly pectinated in the male. In other words, the character indicates a bombyciform habitus. The frontal modifications also afford good characters. Mr. Butler refers to a hairy clothing of the front (Entom. 27), as if I had claimed generic value for such a character; but this is an error. The frontal characters referred to are found in the form of roughenings, protuberances of various forms, and plate-like processes. I am well aware that, in coprophagous Coleoptera for instance, such processes are of not even specific importance; but in the Lepidoptera they have a very high value. Frontal modifications are quite usually associated with endophytes like *Nonagria* and some of the Heliothids, and yet more usually with more or less heavily armed fore tibiæ. In fact, in the very great majority of cases where I find a clypeal modification in a species not an endophyte, I expect to find also an armature of the fore tibia.

In the American fauna our Western States furnish a very great number of forms in which clypeal modifications and armature

of the fore tibia are closely associated. The last of the head structures that are of value in generic separation are the antennæ. Of these, excluding the sexual peculiarities developed in the Deltoids, we have simple, serrate, and pectinate types. If I may be permitted an argument which has been urged against my use of characters variable in other orders, I may cite *Prionus* among the Longicorn Coleoptera as an instance where all three of these types occur in the same genus, and where there is even a large variation in the number of joints within the limits of the same species. I use this argument, however, merely to show that antennal modifications stand in no better position than any others that have been spoken of. Antennal structure is, in my opinion, of very subordinate importance, and, while it may have generic importance in some cases, is yet, as a rule, of specific value merely. The use of the character would often separate insects that are habitually and structurally otherwise very closely allied; how closely, indeed, Mr. Butler himself furnished a pretty illustration. Under *Pachnobia carnea* the British Museum collection contained specimens of three distinct yet closely allied species, in one of which the male antennæ are simple, in the other serrate, and in the third obviously pectinated! Yet they looked so much alike that Mr. Butler unhesitatingly placed them together. We have in our fauna three species closely allied to *Cleoceris viminalis*, looking so much alike that I hesitated at first about considering them distinct. Further material, containing both sexes of each, showed that these three species, in the males, had simple, serrated and pectinated antennæ respectively. To have separated them generically would have destroyed the natural association or relationship of the species. In our American species of *Tæniocampa* all forms, from the simple to the pectinated types, are represented, and so gradual is the change from one to the other that it is almost impossible to draw a dividing line. It would be easy to multiply instances, was there anything to be gained by it; but I will add only that my studies have led me to the conclusion that in the Noctuidæ, antennal characters are of very subordinate value, and rarely of more than specific importance.

Passing to the thoracic structures, we find valuable characters in the appendages. The legs, as a whole, are much of one type. There are always two spurs to the middle and four to the hind tibia, while the fore tibia is always furnished with an epiphysis. Excluding the sexual modifications, the legs are frequently clothed in a characteristic manner, the peculiarity running through a series of allied species. This is of generic value. Beside the usual clothing of hair and scales, there may be an armature of chitinous spinules to the tibiæ. These may be on the middle tibia only, on the middle and hind tibiæ, or all may be so armed. This is a constant character, and of generic importance. I would



not associate species with entirely unarmed tibiæ with those that have any of them spinulose. I have yet to find a species in which this feature varies, either as to the absolute presence or absence of spines, or as to the number of pairs of tibiæ furnished with them. The character separates no closely allied species within my knowledge. Besides this armature of spinules, the fore tibia is very frequently furnished with one or a series of stouter, more claw-like processes, and frequently it is abbreviated or chitinized. This armature or its variations can be used in many cases, but is subject to considerable variation, and is of the same relative importance as antennal structure. The wings afford good generic characters by their shape and proportions, and usually groupings made on marked wing forms will be found to afford other distinctive features. Venation is important of course; but this is of use mainly in divisions higher than generic, and is very constant throughout the family. Mr. Butler has recently insisted strongly, and I am inclined to believe justly, upon the division proposed by Guénee into Trifidæ and Quadrifidæ, based on the position of vein 5 of the secondaries.

In some of the Bombyciform Noctuids there is a tendency to lose the accessory cell of primaries, and this is sometimes a good character. It must be carefully used, however; for I have seen a specimen where the cell was normal on one wing and absent on the other; while in other specimens of one species all forms of development, from no cell at all to one that was complete, have been found. In the Deltoids the neuration of the primaries often becomes aberrant, and furnishes good generic characters. Differences of thoracic vestiture, whether composed of hair alone or scales alone, also furnish good bases for generic division in some cases and in some groups. In others the differences are specific merely. The tuftings of the thoracic vestiture are of considerable value, and peculiar developments, as in *Cucullia* for instance, will run constant through a long series of species. Abdominal structures are few, and the tuftings only have been made use of in generic separation. They are unsatisfactory, and of very unequal value.

I have made no reference to the class of modifications that are called secondary sexual. These may occur on almost any part of the body, and are usually given generic value. The legs and antennæ are most usually the bearers of these peculiarities. The primary sexual structures have thus far furnished specific characters only in the Noctuidæ, and I do not care to venture an opinion upon the question of a greater range for them at present.

The characters are not numerous; but they serve for numerous combinations, and they leave room for a great deal of individual opinion. Mr. Butler has, in his arrangement of the Noctuidæ in the British Museum, placed values on

characters quite different from those here indicated, and has, in some cases, associated *Tæniocampæ*, *Mamestræ*, *Hadenæ*, and *Agrotids*, as Lederer defines them, under one term. Our American forms are scattered among genera quite different in structure (according to my views), and I failed utterly to get at Mr. Butler's idea of a genus. The above statement of the characters used by American authors generally, and before them by the Germans, is presented in order to draw from Mr. Butler his ideas on the subject.

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ON SOME MACRO-LEPIDOPTERA COLLECTED AT  
RANNOCH IN 1891.

BY ROBERT ADKIN, F.E.S.

ON 24th March of last year Mr. William Salvage left London for Rannoch, his object being the further investigation of the Lepidopterous fauna of that renowned locality. Collecting in Scotland is at all times a precarious occupation, on account of the uncertainty of meteorological conditions, and Rannoch is no exception to the rule. Mr. Carrington, in an article on this district (Entom. xvii. 145), very aptly says, "Given warm sunshine and fair wind, it is not possible to set all the insects that one may take, so prolific is the locality; but on the other hand, if cold and wet, which is more frequently the case, matters are precisely the reverse." Unfortunately, last year matters were "precisely the reverse." On arriving at his destination Mr. Salvage found it snowing hard with a north-east wind and frosty nights and everything very backward. In the early part of May, when the "Sallows" were out, the east wind still continued, and during the month it was at times very stormy, snow still covering the hill-tops and "the waves on the loch breaking like the sea upon the shore." June was warmer, and the outlook for the rest of the season more encouraging; but unfortunately "sugar" proved to be an utter failure, and "flowers" were hardly more attractive; consequently the means by which the majority of the most-sought-for species are usually obtainable were of no avail. August and September, however, proved but little better than the earlier months; at times it was "blowing great guns," and "as dark as November, so that no respectable insect dare move," and a similar state of things continued until the season was brought to a close at the commencement of October. Despite these most unfavourable conditions, a very fair collection was got together,\* and although it includes no new species, some of the series taken are of sufficient interest to warrant a few remarks.

\* Some few specimens taken at Rannoch by Mr. W. Reid are, for the purpose of this paper, included by me in this collection.—R. A.



The Pieridæ are represented by *Pieris brassicæ*, *P. rapæ*, and *P. napi*, all of the most ordinary form. *Argynnis selene* and *A. euphrosyne*, a long series of the latter, show no material divergence from southern specimens, but have a somewhat brighter general appearance. *Vanessa urticæ* is also similarly affected, the brightening being in this case attributable chiefly to the richer tone of the brownish coloration, and to the intensification of the blue submarginal crescents, and, in this respect, identical with specimens from the Isle of Man.

*Erebia epiphron* was taken in considerable numbers; the whole of the specimens are large in size as compared with those from the Lake district of England and are referable to the var. *cassiope*, there being no trace of a white centre to the black spots in any of them; but in the number and size of these spots and the intensity of the fulvous patches on which they are placed they show a wide range of variation; in some individuals the patches are but faintly indicated and the spots absent, in others the patches form a broad band intersected by the wing rays, and the spots are strongly produced, while a number of intermediate forms connect these two extremes. *E. æthiops* is also well represented, and varies greatly in the tone of ground colour, some examples being exceedingly rich and velvety in appearance; as well as in the intensity of the reddish patch and the number and size of the ocelli that it contains.

*Cænonympha typhon*, including both pale and dark examples, with various phases of the apical ocellus, extending from a well-defined pale spot with black centre, to an almost imperceptible pale dot; indeed in one specimen this mark is altogether wanting. *C. pamphilus*, *Thecla rubi*, and *Lycæna icarus*, are each represented, but call for no special remark.

One of the great prizes to be sought for at Rannoch is *Sesia scoliiformis*. The late Nicholas Cook used to take it there, but Mr. Carrington tells us that he never got nearer than an empty pupa case. The larva feeds in the stems of the large birch trees, and is therefore difficult to take, and is, moreover, exceedingly prone to the attacks of parasites. It was thought that by "sleeving" the stem of some of the infested trees the imago might be entrapped on emergence, for it has the reputation of leaving the pupa at sunrise; but this method proved an utter failure, the "sleeves" requiring an immense amount of attention to protect them from the cattle that are wont to wander among the trees, seeking what they may devour, and the few that escaped their attentions produced nothing better than ichneumons. A frequent search of the other infested trees at daybreak was equally unproductive, and the only two imagines secured were bred from larvæ that had been cut out when nearly full fed. These specimens are somewhat smaller than the Welsh examples, a fact that I believe has been previously noted.

*Asteroscopus nubeculosa* is another "Rannoch" species; it is one of the earliest to appear, and may be found at rest even while the snow is still upon the ground; a long series was taken, including many very fine examples, some of them being considerably lighter in colour than others.

Owing to the failure of "sugar" throughout the season, the nocturnal species are very poorly represented. *Cymatophora* or calls for no special remark, but *C. duplaris* furnished some exceedingly dark examples, while *Asphalia flavicornis* exhibits the forms of variation peculiar to Scotland. *Acronycta myrica*, *Tapinostola fulva*, and *Agrotis strigula* (*porphyrea*), are all represented. *Noctua glareosa* and *N. augur* exhibit both light and dark forms; *N. festiva* is small in size and variable in ornamentation, but shows no very extreme forms; a few specimens each of *N. baia*, *N. sobrina*, *N. castaneæ* and its variety *neglecta*, complete the list of this genus. *Triphæna comes* is disappointing both in number and variety; while *Pachnobia rubricosa*, of which a long series was taken, is distinctly greyer in tone than the more southern specimens. The *Taniocampæ* include some fine examples of *T. gothica* var. *gothicina*, pale forms of *T. stabilis*, and a variable series of *T. incerta* ranging in colour from a deep reddish brown to pale grey. *Aplecta occulta* are all of the dark form, the larvæ of which are said to feed on *Myrica gale*, while those feeding on birch are said to produce the "silvery" type. *A. tincta*, a long and very uniform series, is, as compared with Sussex specimens, somewhat brighter in appearance. The *Hadenæ* are represented by very ordinary forms of *H. rectilinea*, *H. adusta*, *H. contigua*, and *H. dentina*, while *H. pisi* is prettily mottled. *Anarta cordigera*, of which there is a large number, shows some amount of variation in the comparative depth of the ground colour and that of the dark central band, as well as in the size and form of the white reniform stigma. *A. melanopa*, on the other hand, was exceedingly scarce; and a few specimens of that constant species *Euplexia lucipara*, and *Brephos notha*, bring the Noctuæ to a conclusion.

The Geometræ form a very interesting part of the collection; many of the species taken are represented by long series that exhibit widely divergent forms, but with one exception they cannot be accounted rare. Perhaps the one most closely associated with Rannoch is *Phibalapteryx lapidata*, of which a considerable number were taken; it appears to be a very constant species, showing no real variation, but the tone of colour of the females is lighter than that of the males. *Halia brunneata* (*pinetaria*) was met with in some abundance, and a series secured in better condition than is usual with this species. *Psodos coracina* (*trepidaria*) exhibits some striking modifications of the central band; in some few this is completely severed beyond the middle, in others much attenuated, while in others, again, it is



broad and distinct from the costa to inner margin; the coloration also is subject to much variation, being in some examples almost uniformly blackish and the central band hardly darker, while in others it is silvery grey with the blackish margins of the central band showing in strong contrast. *Larentia cæsiata*, *L. flavicinctata*, and *Lobophora lobulata*, all show a similar phase of variation in regard to the colour of central band and ground of wing. *Larentia salicata* is less striking in this respect, and *Lobophora halterata* (*hexapterata*) is the *zonata* form, in which the median area is pale. *Emmelesia minorata* (*ericetata*) also has the central band severed in some individuals, but more frequently complete, and in other respects is fairly constant. *Eupithecia* captured in the imago state are seldom satisfactory, and beyond a few *E. satyrata* var. *callunaria*, *E. nanata*, and *E. indigata*, there is little to be said for representatives of the genus in this collection, nor does *Ematurga atomaria* or *Thera simulata* call for any special mention; on the other hand, *T. juniperata*, of which a long series was bred, varies very considerably. As compared with south English examples these are smaller, and give the general impression of a brighter insect, as is the case with so many of the Scotch species; the brightness in this case is due chiefly to the more pronounced white margins of the central fascia; this marking is also subject to considerable modification, being sometimes represented by a costal patch extending beyond the middle of the wing; in other specimens there is also a well-defined dark spot on the inner margin, indicating the termination of the fascia, while more frequently it forms a complete band; the apical streak is also strongly produced in some individuals, but in others it is hardly discernible.

*Melanthia bicolorata* (*rubiginata*) furnishes a good example of geographical variation. The form most frequent in the South of England may be roughly described as:—white; basal patch smoky brown; an irregular patch of the same colour on the centre of the costa, enclosing the discoidal spot and extending hardly to the middle of the wing; between it and the inner margin one or more indistinct bluish grey spots; hind margin clouded with brownish grey. In the Rannoch series, and indeed in Scotch specimens generally, the costal patch is continued to the inner margin and forms a broad fascia, frequently divided beyond the middle; the dark clouding of the hind margin, also, in many specimens, extends over the whole of the wing. Curtis (Guide, Gen. 928; Brit. Entom. Lep. II. pl. 643, pub., 1837) described this form under the name of *Zerene plumbata* in the following words:—“White; head and thorax brown and grey; superior wings inclining to cream colour, with a patch at the base, and a fascia across the middle, generally broadest at the costa; brown variegated with grey and darker brown lines; the margins are sinuated, and there is a black dot on the disc; posterior margin lead-

colour, with a pale crenated striga, and a long patch at the tip much darker: inferior wings with a similar fimbria and striga, a curved fuscous line across the middle, with a black dot towards the base; the abdomen is spotted with brown down the sides, sometimes with two or more spots on the back of the apical joints." He further adds:—"The males frequently have the upper wings of a dark lead-colour, with the usual brown markings, the underwings having a broad plain fimbria of the same colour; in the females the fascia is generally broad throughout, but it is sometimes divided towards the inferior margin in the males. Variable as this species is, it may readily be distinguished from the foregoing (*Z. rubiginata*, Hub., Wood 606) by the *perfect* fascia of the upper wings." The varietal name *plumbata* appears to be generally accepted as applicable to the suffused forms only, but it will be seen from the foregoing that it applies equally to all the forms having a central fascia, even though the fascia be divided, whether suffused or not.

The *Cidarias* form a particularly interesting group; *C. siderata* and *C. miata* have an unusually mottled appearance, while *C. testata* is smaller and of a somewhat yellower tone of coloration than south English examples. *C. populata* is represented by a long series of extreme forms, which may be divided into two well-defined sets; the one has for its base the more typical examples, in which the usual markings are clearly defined, but varying greatly in intensity of coloration in individuals, some in which they are dark, and consequently in strong contrast with the pale ground colour, being particularly handsome in appearance. The other includes the more obscure forms. Commencing with a unicolorous smoky-brown or sometimes fuscous insect (= var. *musauaria*, Frr.), they extend through various gradations in which the markings become discernible, although but little darker than the ground colour, thus forming a connecting link with the least strongly marked examples of the other set. *C. immanata*, as might be expected, is a remarkably varied series, but the variation appears to be due to a greater or lesser amount of colour, rather than to any obliteration of the normal markings. Thus, taking as the type an insect having its anterior wings ornamented by a dark basal patch, followed by a tawny band edged with white, a broad irregular dark central fascia, also followed by a tawny white-edged band, and the outer margin mottled, we find in one case the dark colour disappearing from the basal patch, and the central fascia becoming filled up with whitish (= var. *marmorata*, Haw.), and the extreme is reached in this direction by the tawny bands also becoming pale, little but the dark outlines of the various markings remaining; in the other case the lighter shades give way to the darker tints, the various modifications providing an unlimited number of intermediate forms. *C. corylata* is generally less prone to variation than the



foregoing, but the long series in this collection is quite exceptional in this respect. The tone of colour varies considerably in different individuals, the usual dark markings being so intensified in some as to give the appearance of an almost black and white insect, while in others the greenish-brown clouding pervades the area of the wing to a considerable extent; but perhaps the most important forms of variation are due to modifications of the central band; this in some specimens is broad and complete, in others but little more than half the proportionate width; it is also sometimes widely divided below the middle; and lastly, it disappears, and is replaced by some more or less distinct grey clouding, this last form being known as var. *albocrenata*, Curtis. It is unnecessary that I should repeat his description here, but his remark with regard to *ruptata*, Hub. (= *corylata*, Thnb.),—"I have a remarkable variety that I took in Scotland, making an approach to the following," *i. e.* *albocrenata*,—applies well to some of the intermediate forms in this series.

The remainder of the collection consists of the following, chiefly odd specimens, that call for little comment: *Selenia bilunaria* (the largest male I ever saw), *Boarmia repandata*, *Dasydia obfuscata*, *Zonosoma pendularia*, *Acidalia aversata* (and the commoner form without band, *spoliata*, Staud.), *A. fumata*, *Fidonia carbonaria*, and *Coremia munitata* (somewhat more silvery in tone than the usual Scotch form).

Among the autumnal larvæ that were obtained are some of an *Eupithecia* that were beaten from juniper, which it is hoped will produce *helveticaria* or its variety *arceuthata*.

Lewisham, April, 1892.

## NOTES ON BRITISH LEPIDOPTERA.

By RICHARD SOUTH.

### THE GENUS MELANIPPE.

(Continued from p. 90.)

#### MELANIPPE SOCIATA.

*Subtristata*, Haworth, Doubleday, and Newman; *substriata*, Wood; *birivata*, Stainton.

Borkhausen named and described this species as *sociata* in 1794, at least ten years before Haworth gave it the name of *subtristata*. The older name must therefore be adopted for this insect.

Basal third of fore wing grey, frequently tinged with brown, intersected by a slender whitish line, and limited by a white band, which is traversed by a more or less distinct greyish line; the

central fascia is darker grey (sometimes brownish), enclosing a black discoidal spot, the external half intersected by a pale wavy line edged internally with blackish; beyond is a white band traversed by a grey line, which is often interrupted; outer marginal area grey, frequently tinged with brown, intersected by a white sinuous line. Hind wing grey; the basal third contains a black discoidal spot, is traversed by some whitish lines, and limited by a white band, which is intersected by a grey line agreeing with that on the fore wing; white submarginal line wavy. Fringes pale grey, and whitish chequered with darker at ends of nervules, and preceded by an indistinct black line. Thorax dark grey, with inconspicuous black dots.

The white band and line on the basal area of the fore wing vary in width, and consequently this portion of the wing is darker or lighter, according to the width of these markings. The central fascia also varies in breadth, and this to a large extent controls the width of the white band which follows it. In some specimens the central fascia is much contracted below the middle, and in the form known as var. *degenerata*, Haworth, the fascia is separated into two portions, the larger being the costal one.

On the hind wings there is rather more variation, but the outer marginal area always corresponds with that of the fore wings. In some specimens the hind wings are white, with the basal two-thirds sparingly sprinkled with greyish, and limited by a transverse line of blackish dots. In others they are white, faintly dusted with grey, and traversed by four equidistant grey lines, the third dotted with black throughout its course. One specimen, captured by myself in Hertfordshire, has the basal two-thirds paler than usual, and the median nervules are marked with blackish as far as the limiting line, which in this specimen is very indistinct.

Two characters almost invariably present in the next species (*M. rivata*) are sometimes exhibited, in a modified form, in some examples of *M. sociata*. These are the pale oblique dash from apex to submarginal line and the blackish longitudinal bars below. The latter are, however, generally represented in *sociata* by two blackish spots within the submarginal line, and sometimes obscuring it at this point.

Var. *obscurata*, South, Entom. xxi. p. 27, fig. (1888).

Fore wings deep brownish grey, the basal area limited by a fine whitish transverse line, not always clearly defined; the central band, containing a black discoidal spot, is hardly darker than the rest of the wing, edged inwardly by a thin whitish line, and outwardly by a double whitish line, which is acutely angulated about the middle; submarginal line whitish. Hind wings pale brownish grey, outer third much darker, limited inwardly by a double whitish line, and traversed by a submarginal interrupted whitish line.



This interesting form is the only representative of *M. sociata* in the Isle of Lewis, and occurs there in June and August.

MELANIPPE RIVATA.

*Sylvaticata*, Haworth, Wood.

Generally larger than *M. sociata*, but similar in colour and pattern. On the fore wing the central fascia is usually broader, deeper in colour, and the intersecting black-bordered pale line is nearer the outer edge; the white bands are, as a rule, broader, and the intersecting grey line of the outermost is only distinct towards costa; the outer marginal area of the wing is paler grey, and is sometimes tinged with bluish, in the upper portion there is an oblique pale irregular dash from the apex to submarginal line, and below this there are two blackish longitudinal bars intersected by the white submarginal line, and edged with rusty brown on the outer margin. Hind wing white, with a large black discoidal spot; the base is greyish up to the first of three narrow transverse central grey bands, which do not always reach the costa; the outer marginal area is of the same colour as that of fore wing, but the intersecting line is rather broader; there is sometimes an indistinct greyish line between this area and the third transverse grey band. Fringes as in *M. sociata*, but the black line is more distinctly evident. Thorax pale grey, with several black dots.

Entomologists do not appear to be agreed as to the distinctness of this species from *M. sociata*. Forms of the latter certainly come very close to *rivata*, but they always lack one or more of the characters of that insect.

I can hardly point out any particular feature that will serve to distinguish the one species from the other. Absence of brownish tinge on the outer marginal area will not alone suffice, as some undoubted specimens of *sociata* have this portion of the wings coloured exactly as in *rivata*. The width of the central grey fascia is not worth much by itself, as some examples of *sociata* have a broader fascia than some specimens of *rivata*. The white bands, too, are often as broad in certain examples of *sociata* as in any specimen of *rivata*. On the under surface of the fore wings of *rivata* the submarginal white line is broken up into dots towards the costa, but we shall find that this is also the case in some examples of *sociata*.

The paler thorax, with distinct black dots in conjunction with broad white bands on all the wings, and the abbreviated character of the central lines on hind wings, are of service in the identification of *rivata*.

I have taken *sociata* at various times and places from May to August, but I have only met with *rivata* on the wing in June. Second broods of the last-named have been bred in confinement,

but I am not aware of specimens of a second brood having been captured.

The respective larvæ of these two insects are very similar, and feed on *Galium mollugo*. A comparative description by the late Mr. Hellins will be found in Newman's 'British Moths,' p. 161.

#### MELANIPPE MONTANATA.

In colour this species varies from chalk-white to creamy white. The markings of fore wings consist of a grey or ochreous grey basal patch (sometimes absent); beyond is a curved line, indicated by a brownish grey spot on the costa, one on the median nervure, and a short upright streak on the inner margin; the central band, which varies in width, is generally continuous from costa to inner margin, and ranges in colour from very pale rusty brown, through grey-brown to dark grey, or almost black; the upper portion of this band usually contains a patch, varying in size, of the ground colour, and in this is placed the black discoidal spot. This central band is almost invariably contracted below the middle, and not infrequently it is completely severed at this point, or sometimes nearer the inner margin.\* The outer marginal area is suffused with pale fuliginous grey or pale smoky brown; this area is sometimes limited inwardly by a brown line, bordered by a line of the ground colour, and intersected by a wavy whitish line; all these characters of the outer margin are, however, subject to modification in the direction of complete effacement. The hind wings have the outer marginal border, submarginal and three central lines, greyish and more distinct in the female; but the lines especially are often indistinct towards costa, or altogether absent in both sexes.

Var. *shetlandica*, Weir, Entom. xiii. p. 291, pl. 4, figs. 10, ♂, 11, ♀; xiv. p. 280.

This is the Shetland mainland form of the species. The fore wings are more or less suffused with pale ochreous brown; in the specimens figured only the margins of the central band are clearly defined, the median portions being nearly filled up with the ground colour; the outer marginal area is brownish, and the submarginal line is very conspicuous. Hind wings are paler, but suffused; the outer margin is bordered with greyish, preceded by some greyish lines, which, in the male, do not reach the costa.

Referring to the specimens from Unst, the most northern isle of the Shetland group, Mr. Weir (Entom. xvii. p. 3) says:—"It is singular to find that the specimens of this insect from Unst are finer than those from mainland. They vary considerably in the intensity of the ground colour of the wings, from light to

\* A specimen with the band separated into three portions is recorded (Entom. xix. p. 283).



dark grey, but none are white in this respect." I have only three specimens from Unst, and four from the mainland; the former are suffused with brownish grey, and the markings, especially the central band, are clearer and brighter than in the mainland specimens.

*M. montanata* from the Orkney Islands "are of the normal colour, except one very light variety, but none approach the variety *shetlandica*" (Weir, Entom. xv. p. 4).

Specimens from Arran have a very pale brownish central fascia and basal patch; the space between them, and also the outer marginal area, is suffused with pale greyish brown. Altogether, these examples have a very washed-out appearance, and agree in this respect with some specimens from N. Devonshire.

Of specimens from the Outer Hebrides, Mr. Weir wrote, in 1881 (Entom. xiv. p. 221):—"The whole of the ground colour of those captured is suffused with grey, and the specimens are far below the usual size; but they do not resemble those from the Shetlands in the breaking up of the central band into bandlets." I have a short series from Lewis, taken by Mr. McArthur in 1887. In one of these the central band is as dark and broader than in any specimen of *montanata* in my collection, whilst in another example in the series the band is slender, its upper portion intersected transversely almost to the middle by the ground. In a third specimen the band is represented by an oblong blotch from the costa to median nervure, and a thin upright streak on inner margin. The hind wings seem to be rather more distinctly marked than usual in some of the specimens. A few of the specimens obtained by Mr. McArthur in the year adverted to were silvery white in colour, and there was much aberration in the central band, culminating in the almost total absence of this marking (see Entom. xxi. p. 27).

Mr. McArthur tells me that in the Shetlands *montanata* occurs only on the moorlands. He supposes that the larva must feed on the heather or grass; probably the latter, as that is a known food-plant. In the Isle of Lewis, Outer Hebrides, *montanata* is found commonly in the woods about Stornaway Castle, and has not been met with often, if at all, in any other part of that island.

Var. *fuscomarginata*, Staud., var. A, Guen., is the form in which the outer marginal area is broadly suffused with fuscous.

Var. *lapponica*, Staud., is smaller and paler than the type; the central band nearly obsolete.

A curious aberration is figured, Entom. xiv. pl. 1, fig. 20. All the wings are smoky leaden grey; the central band is pale obscure grey-brown; the black discoidal spot is very distinct on all the wings, and there is a black mark at the angle of the band on fore wings. It was taken by the Rev. H. T. Hutchinson near Longfleet, Wilts, in the summer of 1881.

# A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from vol. xxiv., p. 283.)

THE following fresh lists have been received :—

(29.) Alfred Sich. A MS. list of the Geometræ of Chiswick, Middlesex, numbering 54 species.

(30.) H. Rowland-Brown. A MS. list of 51 species of Geometræ taken in Middlesex.

(31.) Dr. Percy Rendall. A MS. list of Lepidoptera taken within two miles of the small village of Whitton, close to Hounslow. The following are new to the Middlesex list :—

*Lithosia sororcula*, Hufn. (as *aureola*).

*Notodonta trilophus*, Fb.

*Acronycta alni*, L. This was recorded doubtfully on p. 120, vol. xxiv.

*Mamestra furva*, Hb.

*Apamea gemina*, Hb. Previously omitted by accident, as it has also been taken at South Hampstead (*Watts*) and Bishop's Wood (*Vaughan*).

*Miana literosa*, Haw. Already recorded, but only doubtfully (Entom. xxiv. 280).

Mr. A. Bacot writes that the supposed *Plusia festuæ* recorded from Clapton was only *P. chrysitis*.

## LEPIDOPTERA.

### *Geometridæ*\* subf. *Uropteryginæ*.

*Uropteryx sambucaria*, L., generally distributed (*Godwin*); Mill Hill (*South*); Isleworth (*Fenn*); Bedford Park (*Fenn*); [St. John's Wood, some years common (*South*)] ; Maldon Crescent (*Knaggs*); Kentish Town (*Vaughan*); Harefield, fairly common (*Wall*); Chiswick, common, larva on ivy and white jasmine (*Sich*); South Hampstead, abundant (*Watts*); Tufnell Park, Highgate (*Shepherd*); Ealing (*Adye*); Clapton (*Bacot*); Oxhey Lane, very common (*Rowland-Brown*); Dalston (*Prout*).

### Subf. *Ennominaæ*.

*Epione apiciaria*, Schiff., Bishop's Wood, Hampstead, Clutterhouse Lane (bred from sallow), Kingsbury, Old Oak Common (*Godwin*); Mill Hill, local, found only in a hedgerow near Goldbeaters (*South*); Whitton (*Rendall*); Harefield, fairly common (*Wall*); Hammersmith (*Mera*).

*Rumia luteolata*, L., generally distributed (*Godwin*); Mill

\* Geometræ of our lists; but here regarded as a single family, with several subfamilies.



Hill (South); Isleworth (Fenn); Bedford Park (Miss E. Sharpe); Whitton (Rendall); Harefield, abundant (Wall); Chiswick, common, larva on hawthorn, &c. (Sich); South Hampstead, abundant (Watts); Tufnell Park, Highgate (Shepherd); Clapton (Bacot); Oxhey Lane (Rowland-Brown); Dalston (Prout); [St. John's Wood, often common (South)].

*Venilia macularia*, L., Bishop's Wood (Knaggs fide Vaughan); Pinner Woods, common (Watts); Harrow-Weald (Rowland-Brown).

*Angerona prunaria*, L., one specimen, Bishop's Wood, Hampstead (Godwin).

*Metrocampa margaritaria*, L., Bishop's Wood, common, Kingsbury, Old Oak Common, rare (Godwin); Mill Hill, rather common (South); Bedford Park (Rev. J. W. Horsley); Chiswick (Ckll.); Whitton (Rendall); Harefield, one taken (Wall); Highgate (Shepherd); Ealing (Adye); Pinner Woods, Harrow-Weald, common (Rowland-Brown).

*Ellopiia prosapiaria*, L., Whitton (Rendall); Harefield, one in 1886 (Wall).

*Eurymene dolobraria*, L., Bishop's Wood (Vaughan).

*Pericallia syringaria*, L., Bishop's Wood, fairly common, Old Oak Common, privet used to grow here (Godwin); Mill Hill, the larvæ not scarce on privet (South); Whitton (Rendall); Harefield, sparingly in gardens (Wall).

*Selenia*\* *bilunaria*, Esp., generally common (Godwin); Mill Hill (South); Bishop's Wood (Vaughan); Whitton (Rendall); Harefield, fairly common, summer var. also (Wall); Chiswick, once in July (Sich); Highgate (Shepherd); Ealing (Adye); Harrow-Weald (Rowland-Brown). *S. tetralunaria*, Hufn., Bishop's Wood (Bartlett fide Vaughan, as *illustraria*); Whitton (Rendall).

*Odontoptera bidentata*, Clerck, Bishop's Wood, common (Godwin); palings, Milfield Lane (Vaughan); Whitton (Rendall); Highgate (Shepherd); Harrow-Weald, common at light (Rowland-Brown).

*Crocallis elinguaris*, L., generally common (Godwin); Mill Hill, larvæ very common on hawthorn, sloe, &c. (South); Bedford Park (Rowland); Hampstead (Vaughan); Whitton (Rendall); Harefield, not common (Wall); Chiswick, larva common, the dark-coloured ones on pear trees and the light-coloured specimens on currant and honeysuckle (Sich); South Hampstead, common (Watts); Tufnell Park (Shepherd); Harrow-Weald (Rowland-Brown).

*Eugonia alniaria*, L., Hampstead Heath, Old Oak Common, Hammersmith, larva on sallow and willow (Godwin); West Hill, Highgate (Vaughan); Whitton (Rendall); Chiswick, larva

\* *Selenia* has also been used by Nuttall for a genus of North American Cruciferæ.

once on trunk of Lombardy poplar, near ivy (*Sich*); Ealing (*Adye*). *E. erosaria*, Bork., Pinner, 1882 (*Watts*); Highgate (*Shepherd*). *E. quercinaria*, Hufn., generally distributed (*Godwin*); Mill Hill (*South*); Regent's Park, Haverstock Hill (*Vaughan*); Whitton (*Rendall*); Harefield, two in 1886 (*Wall*); Regent's Park, abundant (*Watts*); Highgate (*Shepherd*); Kensington Gardens (*Mera*); Clapton (*Bacot*). *E. fuscantaria*, Haw., Whitton (*Rendall*); one on a lamp near Acton (*Mera*).

*Himera pennaria*, L., Bishop's Wood, Hampstead, Hampstead Heath, generally distributed (*Godwin*); Mill Hill, larvæ on hawthorn, sloe, &c., found at night (*South*); Whitton (*Rendall*); Harefield, rather common (*Wall*); Chiswick, once (*Sich*); Highgate (*Shepherd*); Ealing (*Adye*).

#### Subf. *Amphidasynæ*.

*Phigalia pedaria*, Fb. (= *pilosaria*), generally distributed, on lamps (*Godwin*); Mill Hill, at rest on palings, trees, &c. (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Chiswick, larva on plum, sallow, &c. (*Sich*); Hyde Park and Hampstead, common (*Watts*); Highgate (*Shepherd*); Shepherd's Bush (*Mera*); Harrow-Weald (*Roland-Brown*).

*Nyssia hispidaria*, Fb., said to have been taken in Bishop's Wood, Hampstead (*Godwin*); Kew Wood fence (*Vaughan*).

*Biston hirtaria*, Clerck., generally distributed (*Godwin*); Bedford Park (*J. Gray*); various squares and gardens (*Vaughan*); Whitton (*Rendall*); Chiswick, larva on lime (*Sich*); common (*Watts*); common (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*).

*Amphidasys strataria*, Hufn., Finchley Road (*Godwin*); Whitton (*Rendall*). *A. betularia*, L., generally common (*Godwin*); Mill Hill, larvæ very common on various trees (*South*); Bedford Park (*Fenn*); near site of Burleigh Road, about 1865 (*Vaughan*); Whitton (*Rendall*); Chiswick, larva, green specimens on willow and young shoots of apple trees, brown ones on elm and birch (*Sich*); South Hampstead, common (*Watts*); Bishop's Wood (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*).

#### Subf. *Boarmiinae*.

*Hemerophila abruptaria*, Thnb., generally common (*Godwin*); Mill Hill (*South*); Bedford Park (*Miss E. Sharpe*); Camden Town, Kentish Town, City Road, many specimens of the dark var.\* have been taken in these localities (*Vaughan*); Whitton (*Rendall*); Chiswick, common at rest, larva once near privet hedge (*Sich*); South Hampstead, common (*Watts*), Tufnell Park (*Shepherd*); Ealing (*Adye*); Hammersmith (*Mera*); Clapton

\* See also D. A. Onslow, Entom., 1890, p. 136.



(*Bacot*); Dalston (*Prout*); [St. John's Wood, common, the dark form occasionally (*South*)].

*Cleora lichenaria*, Hufn., Pinner Woods, larvæ very plentiful (*Rowland-Brown*).

*Boarmia repandata*, L., generally distributed (*Godwin*); larvæ common on hedges at night at Mill Hill (*South*); Bishop's Wood (*H. Bartlett*); common at Hampstead (*Watts*); Tufnell Park (*Shepherd*). *B. gemmaria*, Brahm. (= *rhomboidaria*), generally distributed (*Godwin*); Mill Hill, larvæ common (*South*); Bedford Park (*Miss E. Sharpe*); Whitton (*Rendall*); Chiswick, larva on plum and white jasmine (*Sich*); common at Hampstead (*Watts*); Highgate (*Shepherd*); Ealing (*Adye*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*). *B. gemmaria* var. *perfumaria*, Newm., Kentish Town, Highgate (*Vaughan*); Tufnell Park (*Shepherd*); [St. John's Wood, not uncommon (*South*)]. *B. roboraria*, Schiff., one specimen, Pinner Woods, July 7th, 1882 (*Watts*). *B. consortaria*, Fb., near Uxbridge (*Bembow*, Entom., 1878, p. 21).

*Tephrosia*\* *crepuscularia*, Hb., Pinner Woods, April 27th, 1881, &c. (*Watts*).

#### Subf. *Geometrinæ*.

*Pseudoterpna pruinata*, Hufn., Whitton (*Rendall*); Harefield, moderately common (*Wall*); Hampstead Heath, 1879 (*Watts*); Old Oak Common (*Mera*).

*Geometra papilionaria*, L., Bishop's Wood, bred (*Godwin*); Haverstock Hill, about 1848 (*Knaggs*); Bishop's Wood (*Bartlett*); Whitton (*Rendall*); Harefield, one in 1889 (*Wall*). *G. vernaria*, Hb., Whitton (*Rendall*).

(To be continued.)

### ENTOMOLOGICAL NOTES, CAPTURES, &c.

A HINT TO BREEDERS OF SPHINGIDÆ.—As the time will soon be here when we may expect to see the hawk-moths emerging in our breeding-cages, a hint that I have found very successful (with *S. ocellatus*) may be of use to some of your readers, and what at first looks like a disappointment may turn out to be an advantage; and that is, when you have a female with crippled wings emerge, place her out in your garden, on the proper food-plant, if possible, and she may possibly attract a male (I have tried it several years, and each time it has been a success). Last year I placed a female on a small willow tree, and the next morning there was a very fine male paired with her, (the eye-spots are quite a Cambridge-blue, very different from any I have ever seen). I obtained about twelve dozen fertile ova from the female. When the larvæ hatched I sleeved about half

\* *Tephrosia* was early used for a well-known genus of Leguminosæ, but preoccupation in botany is not usually allowed to interfere with a zoological genus.

on poplar and the rest on willow, but the poplar-fed ones got on very much the best, and the pupæ are much larger.—W. E. BUTLER; Hayling House, Oxford Road, Reading, March 18, 1892.

NOTES ON LEPIDOPTERA TAKEN IN 1891.—Please allow me to correct a slight mistake in the above (Entom. 82). The *Eupæcilia geyeriana* bred by Mr. N. M. Richardson was from *Pedicularia palustris* gathered by himself on the same spot where, a few days after, I gathered that from which it was bred by Mr. Eustace Bankes.—O. P. CAMBRIDGE; April 12, 1892.

COCCIDÆ FROM JAMAICA.—The Institute of Jamaica are issuing sets of Coccidæ prepared by Mr. T. D. A. Cockerell, Curator of the Museum. The following ten species are comprised in Set 1:—The Rufous Scale (*Aspidiotus articulatus*); the Masked Scale (*A. personatus*); the Cocconut Scale (*Chionaspis vandalicus*); the Pepper Scale (*Diaspis* n.sp., Ckll.); the Croton Chaff-Scale (*Parlatoria pergandii*); the Filiform Palm-Scale (*Ischnaspis filiformis*); the Light-spotted Scale (*Aspidiotus ficus*); the Purple Scale (*Mytilaspis citricola*); the Brown Scale (*Leucanium hemisphæricum*); the Black Scale (*Bernardia oleæ*).

ENTOMOLOGICAL PINS.—In my article on pins, in the March number of the 'Entomologist,' I mentioned, when recommending the use of silver pins, that it would be necessary to have a guarantee that the wire is of pure silver. As regards this point, I have received a further communication from Messrs. Watkins and Doncaster, to the effect that the wire used is not pure silver, but consists of 92 per cent. of pure silver and 8 per cent. of copper and alloy. Messrs. Watkins and Doncaster obtained their wire from the successors to the makers that supplied me with the material for fifteen years or more (they were originally recommended to me by Prof. Flower of the British Museum), and it is, I believe, the same quality as I have been accustomed to use. As I know that this wire is perfectly free from the attacks of verdigris in Coleoptera, I have little doubt that it will prove also satisfactory for Lepidoptera and insects of other orders in which I have tested it but little. I think, therefore, that instead of insisting on the wire being of "pure silver," it be merely required to be up to the standard of 92 per cent. of pure silver, the purposes entomologists have in view will be secured. As regards the price of the pins made from this silver-wire, I see that Messrs. Watkins and Doncaster quote them in their new price-list at from 7s. 6d. to 8s. 6d. per 1000. I believe, from my own experience, that this is a very reasonable price; and I am glad to mention this as Messrs. Watkins and Doncaster have been put to a good deal of trouble in the matter, and I feel that the thanks of entomologists are due to them for introducing into commerce an article that will be of considerable value to working entomologists, but for which the sale can never be very extensive.—D. SHARP; Cambridge, April 5, 1892.

RELAXING LEPIDOPTERA.—Mr. Anderson (Entom. 95) asks for information as to the best means of relaxing foreign Lepidoptera. The method I have employed for a number of years has always afforded me most satisfactory results, and I have, therefore, great pleasure in giving a few particulars concerning it. First, a zinc-box is obtained. A very convenient size is one measuring 12 in. by 10½ in., by 9½ in. deep; three trays, of equal depths, made to lift out easily, with perforated bottoms, and a block in each corner to prevent the upper falling into the lower ones; the lid should be on hinges. Into the trays are placed pieces of ordinary house-flannel,



folded double, which should have previously been soaked in warm water containing a little carbolic acid (about one teaspoonful to a quart of water), and well wrung out, so that no water will afterwards drip from them. The insects may then be placed on the flannel. Carbolic is an important item, as it not only prevents mould, but kills germs which may be in the specimens. It is rather difficult to set down an average time for relaxing, as there are so many things which tend to retard the softening process. A great deal depends on how the insects have been killed, and what treatment they may have been subject to afterwards. A few days ago I had a collection in papers, which appeared to have been subjected to the influence of some essential oil, causing the specimens to be almost proof against vapour, some of them taking as long as a fortnight to relax. Under favourable conditions, and in a warm temperature, *Lycænidæ* and small moths will take about twenty-four hours; the smaller *Nymphalidæ*, two days. The most difficult of all are *Prepona*, *Charaxes*, &c, which should always be thoroughly relaxed before attempting to set them. Delicate green moths require a little different treatment: carbolic acid should not be used for these, as it takes away the colour, neither must the specimens touch the flannel; they should be pinned or placed on a sheet of paper over the flannel. Relaxation may be hastened by placing the box near a fire, but a medium temperature is always preferable.—A. CANT; 54, Weymouth Street, Portland Place, W.

GREEN AND BROWN PUPE OF PAPILIO.—Theoretically, Mr. Cockerell's views respecting the time of emergence of the *Papilionidæ* are interesting (*Entom.* 93), but it certainly does not hold good with *P. machaon*, as both forms of pupæ pass through the winter; and as the green form is more abundant than the brown, the coloration in this species is not apparently produced for protective resemblance. Last spring I obtained many pupæ of *machaon* from Cambridgeshire, from which imagines commenced to emerge in May, and continued to do so until the middle of August, with the exception of four, three being of the green form and one of the brown; all four are still alive, having passed two winters at least. The coloration in the pupæ of different genera is undoubtedly caused principally by the colouring of the immediate surroundings during the process of pupation, but is not constant. I have obtained differently coloured pupæ of the same species of *Pieris*, which had all pupated under precisely similar conditions, and at the same time. But yet I know they do very frequently partake of the surrounding colour, and agree very closely therewith in both tone and hue; for instance, *P. brassicæ*, when attached to a cabbage-leaf, will not only exactly assume the colour, but will also lose the usual black markings.—F. W. FROHAWK; Balham, S.W., April, 1892.

GREEN AND BROWN PUPE OF PAPILIO.—Last August, while in Norfolk, I obtained about two dozen larvæ of *P. machaon*, which all pupated at the beginning of September, and have remained in that stage till now. In these there are three distinct shades of colour to be noticed, *viz.*, a very dark brown (almost black), a lighter flesh-coloured, and a bright green; all these were reared under as nearly as possible the same conditions with regard to food, light, &c., and the green ones do not seem to have chosen a more illuminated position for their metamorphosis than the darker ones (in fact, in some cases, the reverse); and I should like to know if this difference in colour can be accounted for by the fact that the green pupæ pupate on the food of the larvæ, whereas the darker pupæ are placed away

from the food, *i. e.*, on adjacent reeds, which would afford *them* much better protection. In my limited experience I have certainly found that the darker pupæ changed *almost* invariably on the sides and roof of the breeding-cage in which the larvæ were kept; and I should be glad to hear if the experience of any of your correspondents agrees with my own.—F. P. BEDFORD; London, N., April 13, 1892.

“ASSEMBLING” IN LEPIDOPTERA.—I see that in his paper on this subject (Entom. 84), Mr. Sykes, quoting the instance of *Brephos parthenias*, which came under my notice last year, thinks it probable that the next species, *notha*, would be affected in the same way. On this point I can give him no information; but his theory is supported to some extent by the fact that *Orgyia gonostigma*, a congener of *antiqua*, quoted by him as an instance, assembles freely. The males fly only during the hottest sunshine. The female of this species seems to be so attractive, when freshly developed, that even during a stiff breeze I have seen males come up from all quarters of the compass. Another point worthy of remark is that nearly all the males seem freshly emerged; indeed, a series of male *gonostigma* taken in this way is nearly equal to bred. Other species in which I have noticed “assembling,” are *Hepialus lupulinus* and *hectus*; and among the Geometers, *Larentia didymata* and *Cidaria suffumata*.—(Rev.) G. H. RAYNOR; Panton Rectory, Wragby, April 4, 1892.

BOMBYX QUERCUS PUPATING IN SEPTEMBER.—In August, 1890, I found near Christchurch, Hants, a larva of the above insect; and my brother found one about the same time at Yarmouth, Isle of Wight. Both these caterpillars pupated early in September; one (a female) emerged July 14th, 1891, and the other (a male) two or three days after. They were both the typical form.—B. A. BRISTOWE; Durlstone, Champion Hill, S.E., March 20, 1892.

MACROGLOSSA FUCIFORMIS FEEDING ON SNOWBERRY.—During the last five seasons I have found larvæ of the above insect, and also those of *Sphinx ligustri*, feeding on the snowberry (*Symphoricarpos racemosus*) at Bourne-mouth.—B. A. BRISTOWE; Durlstone, Champion Hill, S.E.

SATURNIA CARPINI TWO YEARS IN PUPA.—I had a number of pupæ of *S. carpinii* lying over for two years. On the 22nd January I was much surprised to find that a beautifully-developed male had emerged; and since that date other emergences have taken place, as follows:—February 2nd, a female; 7th, two males; 9th, a crippled female. The box in which the pupæ were had been kept all last summer and this winter in an outhouse, consequently the imagines were certainly not forced. Is not this an unusual occurrence?—W. J. MEAD; 29, Brooksbys Walk, Homerton, March 18, 1892. [This species often remains in pupa for two years, and sometimes even longer. Autumnal emergence of the imago has been recorded by Mr. Blaber, Entom. xix. 251.—ED.]

RETARDED EMERGENCE OF *E. VERSICOLOR*.—In March, 1891, some pupæ of *E. versicolor* were given to me. Several of these did not hatch that spring, and I continued to keep the pupæ in my breeding-cage. On February 20th, 1892, I was surprised to find a fine female specimen just emerged. I am sorry to say that no more have emerged up to the present time.—E. W. H. BLAGG; Cheadle, Staffordshire, April 7, 1892.

[It would probably be exceptional for all the imagines of this species to emerge the first spring after pupation.—ED.]



NOTES ON THE EARLY MOTHS.—January 2nd. On reading the news papers I find a very severe winter predicted by Professor Walter H. Smith, “the best-known meteorologist in Canada.” I am sceptical, as the winter ought to be nearly over, and we have fine weather. (The forecast turned out to be too correct.) 4th. Hard frost. 5th. Thaw. 7th. Heavy fall of snow; general; about three inches in the streets, which is unusual for Chester. 8th. Continued heavy snow showers; seen nothing like it here in the last fourteen years. 9th. Intense frost. 12th. Thaw, with rain. 22nd. Up to this date we have had intense frosts, snowstorms, and partial thaws; snow still lying outside the city. 23rd. Snow all gone; N.W.; spring-like. February 3rd. Still open weather; young nettles and docks strong and abundant; these come in useful for many of my hibernating larvæ. 5th. Eaton Park; fine; N.W.; picked two male *Phigalia pedaria* (*pilosaria*) off oaks growing by the sides of the drive; a woodman told me there were lots of them in the woods, and had been during the last week; snowdrops in bloom. 6th. Saw *Hybernia rupicaprararia* near Chester. 13th. Went for the day to Delamere Forest; so far we have had a fine, mild February; a lovely morning. Left the train at Delamere station, and for the rest of the day had the exclusive society of moths, magpies, jays, and long-tailed tits. Took only one *P. pedaria*, a male, very pale, light grey, with the “four waved transverse bars” on the upper wing, and two on the lower wing, clearly marked out in dark brown,—one of the finest forms of the insect I possess. No *Nyssia hispidaria*; they are evidently not out. Found eggs of *Orgyia antiqua* on an oak trunk. Came across a very small Noctua caterpillar hibernating in a doubled up bilberry leaf: head, body, and under side, dirty grey, liberally blotched with brick-red, which gives the caterpillar a brick-red appearance. The leaf had been netted in eating, the delicate veins being left like a skeleton leaf. I should say the egg had been deposited on the leaf by the parent moth, which was, probably, *Calocampa solidaginis* (see notes by Mr. Day, Entom. xxiv. 301). I tried digging for pupæ at the roots of trees, but it was a complete failure. From oak trunks (I took all my moths from the trunks of trees or palings) I secured quite a study of *Hybernia leucopheararia*. Where it occurs, this moth is, I believe, usually abundant; but it appears to be more local than the other Hybernidae. From the ‘District Entomological List,’ by Mr. A. O. Walker, I find it marked for “Prenton, Eastham, and Patrick (near Bromborough Mills) Woods; scarce at Ness and Puddington; Delamere, common.” Personally, I have only found it, in this district, in Delamere Forest. There are three forms, of which the following is a description:—*First, or type form.*—Fore wing brown; a clearly defined central grey bar, widest on the costal margin, on which, within the bar, is seated a constant median dark brown spot; the bar narrows to the inner margin, on which is sometimes seated, within the bar, another median dark brown spot. This bar is bounded by two dark brown lines: the first is near the base of the wing, and bent towards the hind margin; the second is beyond the centre of the wing, waved, and forms two lobes pointing towards the hind margin. Beyond this central grey bar there is a narrow, less defined waved band, situated near the hind margin. The fringe is grey, with a thin dark brown interior boundary line of minute crescents. The dark brown wing-rays are carried into the fringe. The lower wing is pale grey, with fringes of the same shade, bounded by a thin dark brown irregular and interior line; the dark brown wing-rays are continued into the fringe. From the interior

margin proceed faint indications of two parallel median dark brown lines. The first, nearest the base, is central; it is often continued across the wing. The second is short, and rarely continued to the centre of the wing. The antennæ (in the male) are delicately ciliated; the head, thorax, and body are dark grey. Abundant. All my captures of *H. leucophearia* were males. I did not see a single specimen of the apterous females. *Second form.*—Fore wings dark brown; the grey band is more clearly defined, and with two dark brown blotches near the tip on its interior boundary line; otherwise similar to the type. Common. *Third form.*—Fore wings black-brown; the grey band is reduced to a series of four or five indistinct spots; lower half of hind wings smoky brown; otherwise similar to the type. A beautiful, but scarce, form: throughout the day I only took three specimens. Feb. 14th. Chester. Off a wall-coping I took a male *H. marginaria* (*progemmaria*), and a fine dark female *P. pedaria*. 15th. Total change in the weather; wind, N.E., with snow showers. 16th. Hard frost. 17th. Showers of snow from the N.W.; snow again covering the streets. 18th. Intense frost; weather general, and on the Continent; 18° of frost at Chester. 20th. Severe frost yet; a N.E. gale to-night; blizzards in the South of England; skating here; snow all over the country; equally severe in Ireland, and on the Continent south of this latitude as far as Venice; strong, disastrous gales at Gibraltar; thunder and lightning with the South of England snowstorms. About two miles out of Chester I came upon a bank of blue, scented violets free from snow, having a south aspect. 21st. Complete thaw; frost and snow all gone; S.S.E.; sunny, warm. Female *P. pedaria* laid eggs in a crevice in her chip-box; eggs dull green, elliptical. 25th. A warm, dark night; thunderstorm with lightning away in the east. Found, next day, the centre of the storm had broken over Delamere Forest, where it was very violent. *H. rupicaprararia*, *H. marginaria*, abundant on gas-lamps; also *P. pedaria*. 26th. Same insects plentiful on the gas-lamps; warm. March 1st. N.E., bitterly cold; hard frost. 3rd. Not a moth on the lamps; bitter and cold. 8th. Up to to-day bitter cold N.E. breezes, with frost. 9th. Heavy snowfall. The 'Standard,' of to-day, says:—"A more backward spring could not well be; and March has neither come in with the ferocity of the lion nor the gentleness of the lamb, but rather with the surliness of the bear."—J. ARKLE; Chester, March, 1892.

*CHÆROCAMPA NERII*: AN ADDITIONAL RECORD.—Having recommenced collecting, after a lapse of some sixteen years, I have recently been reading last year's 'Entomologist,' and see, on pp. 195 and 221, a list of authentic British specimens of *Chærocampa nerii*. Will you kindly let me state that I have in my cabinet a very good specimen, which was caught at Ascot by a gardener in June, 1873, by whom it was given to a friend of my brother, who was then a boy at school at Eton. He gave it to my brother, who brought it home with him, and it has been in my cabinet ever since. The capture was recorded in the 'Field' newspaper of June 28th, 1873.—E. F. STUDD; Oxton, Exeter, April 16, 1892.

COLLECTING IN ABERDEENSHIRE.—We have had a very severe winter in the North, and as much of my collecting has been performed in the midst of blinding snowstorms, it will be at once apparent that my exertions have not added much to my former store of larvæ or pupæ. I have had most success with *Acronycta myricæ*. As is well known, the larva of this insect spins its cocoon in any crevice it may find on stone walls, palings,



and I have or some years found it in plenty on rails and railway chairs; in any of the above positions it is most difficult to find, owing to the precaution which the larva adopts to ensure its safety. After a long and persistent search I have been rewarded with over 300 pupæ, and nearly all were found while the snow was deep on the ground; of course it was only possible to search the parts where the sun had melted the snow. *Phigalia pilosaria* was well on the wing in February, and several were found quietly sitting on the trees with the thermometer many degrees below freezing point, and a coating of six inches of snow on the ground. My opportunities for searching for *Stilbia anomala* and other larvæ have been much restricted, owing to the snow. I have only seen about three dozen *anomala*, a few *Triphæna orbona*, and other Noctuæ larvæ being found at the same time. *Scoparia* larvæ are not rare just now on moss-covered walls; and *Solenobia* larvæ are again on the move, although the majority appear to have pupated. The two "Tigers," *Chelonia caia* and *Arctia (Spilosoma) fuliginosa*, have both awakened from their winter's sleep; they are both more plentiful than usual. I have also seen a few small *Chelonia plantaginis* larvæ. One or two hibernating Tineæ have been found on quiet evenings, fluttering over the snow. *Larentia multistrigaria* is also now on the wing; it is about a month later than last year.—WM. REID; Pitcaple, N.B., March 18, 1892.

LATE SPECIMEN OF *EPIONE VESPERTARIA*.—Whilst collecting larvæ of *Bombyx rubi* and *Spilosoma fuliginosa* on Strensall Common, near York, on the afternoon of Saturday, Oct. 3rd, 1891, I found a somewhat worn specimen of *Epione vespertaria* at rest on dwarf willow. This is by far the latest date on which this species has been known to occur.—W. HEWETT; 12, Howard Street, York.

USUALLY COMMON MOTHS SCARCE IN 1891.—*Cheimatobia brumata*, *C. boreata*, also *Hybernina aurantiaria* and *H. defoliaria*, did not occur last season in the neighbourhood of York in anything like their usual abundance, whilst *Himera pennaria* totally failed to put in an appearance, and *Oporabia dilutata* was represented by some half-dozen specimens.—W. HEWETT.

EARLY APPEARANCE OF *PIERIS RAPÆ*.—An imago of *Pieris rapæ* (a male) was brought to me on Sunday, the 24th January. It was taken on the wing, on the main road here, at about four o'clock in the afternoon, and it would appear to me that it had emerged on the same day. Excepting a small fold in one of the wings, it is a well-grown specimen. As I have never before heard of so early an appearance of this insect, I should be glad to know if it has previously been seen in Britain in the month of January. I conclude the necessary heat can only have been derived from some artificial source. I may add that the weather had for the few days preceding been unusually mild.—LIONEL R. CRAWSHAY; Llandaff, S. Wales, Jan. 29, 1892.

ARGYNNIS LATONA IN DEVONSHIRE.—I may record the capture by myself here on September 11th, 1871, of a perfect specimen of *Argynnis latona*, now in my cabinet. It was flying over a rough fallow field, in which a quantity of borage always grows wild. I remember I could not make out, from its appearance and flight, whether it was *Euphrosyne* or *Megæra*, and caught it to see; and never shall I forget the excitement I experienced when I found the prize I had got.—E. F. STUDD; Oxtou, Exeter, April 16, 1892.

ANNUAL EXHIBITION OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Falling as it does on the very eve of the new collecting season, the date fixed for the next Annual Exhibition of this Society (May 5th and 6th) appears to be well chosen, and the affair promises to be a great success. The Committee, upon whom the arrangements devolve, desire to make this year's exhibition as attractive and instructive as any previous one. Of course the success of the enterprise largely depends upon the members themselves, and there is no doubt each one of them has liberally responded to the Secretary's appeal for assistance.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*April 13th, 1892.*—Mr. Henry John Elwes, F.L.S., Vice-President, in the chair. Mr. Francis Jaffrey, M.R.C.S., of 8, Queen's Ride, Barnes, S.W., was elected a Fellow of the Society. Mr. R. McLachlan exhibited specimens of *Anomalopteryx chauviniana*, Stein, a Caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alluded to the Perlidæ as including species in which the males were frequently semi-apterous. Dr. Sharp enquired if Mr. McLachlan was aware of any order of insects, except the Neuroptera, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the Bombycidæ in which the wings of the male were inferior in size and development to those of the female. Dr. Sharp exhibited specimens of both sexes of an apparently nondescript phasmid insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelles islands, together with *Phyllium gelonus*. He also exhibited specimens of both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the Phasmidæ, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organisation to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in want of food a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the Phasmidæ are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mons. Henneguy had observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of Phasmidæ it was easy to obtain the egg by extraction from a dried specimen. Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicolora*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis adippe* and *Cænonympha pamphilus*; also two specimens of *Apatura iris*, and two of *Limenitis sibylla* in which the white bands were entirely absent. The Hon. Walter Rothschild exhibited, and contributed



preliminary notes on, some hundreds of Lepidoptera, representative of a collection of some 5000 specimens recently made in five weeks, by Mr. W. Doherty, in the South-west of Celebes. The collection included species of *Nectaria*, *Ideopsis*, *Saletaria*, *Limnias*, *Radena*, *Tirumala*, *Euplœa*, *Lethe*, *Melanitis*, *Micalesis*, *Ypthima*, *Elymnias*, *Amathusia*, *Pseudamathusia*, *Discophora*, *Acraea*, *Ergolis*, *Cethosia*, *Cynthia*, *Cupha*, *Terinos*, *Cirrhochroa*, *Junonia*, *Precis*, *Rhinopalpa*, *Xoma*, *Cyrestes*, *Hypolimnas*, *Euripus*, *Rohana*, *Parthenos*, *Neptis*, *Athyma*, *Symphædra*, *Euthalia*, *Limenitis*, *Abisara*, *Huphina*, *Catopsilia*, *Eronia*, *Appias*, *Ornithoptera*, *Papilio*, &c., and several species of *Hesperidæ*. Many of the species were new, and others very rare. Mr. Elwes, Colonel Swinhoe and Mr. S. Stevens commented on the interesting nature of this collection, and a vote of thanks to Mr. Rothschild for exhibiting it was passed by the meeting. Mr. E. B. Poulton gave a lecture "On the denudation of the Scales in certain Species of Lepidoptera, and illustrated it by a large number of photographs shown by means of the oxy-hydrogen lantern. Mr. G. F. Hampson, Mr. Elwes and Mr. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 24th, 1892*.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. R. Burt, of Streatham, was elected a member. Mr. Merrifield exhibited examples of *Selenia illustraria*, *S. illunaria*, *S. lunaria*, *Vanessa urtica*, *Platypteryx falcataria*, *Chelonia caia*, *Bombyx quercus* and var. *callunæ*, to illustrate the effects of temperature on these species. Mr. Merrifield prefaced his remarks on the experiments he had made by referring to those of Weisman and Edwards, which were made on seasonally dimorphic species. He said the results obtained by him were consistent with those of these gentlemen; but he went further than they did, and he found, by subjecting the pupæ to certain temperatures, he invariably, in the majority of the specimens, obtained certain results, a lower temperature generally producing examples which were darker and more intense in colour than those subjected to higher temperatures. In *illustraria*, a brood divided into two portions, and one, placed at a temperature of about 80°, produced normal specimens, while the other portion, placed at a temperature of from 50° to 60°, were strikingly darker in colour; the same results were obtained with *illunaria*, *lunaria*, and *E. autumnaria*, but in the last-named species they were not quite so pronounced. *P. falcataria*, *B. quercus*, its var. *callunæ*, *C. caia*, and *V. urtica* were similarly affected, but in a lesser degree than the species of *Selenia*; in *V. urtica* some of the examples closely approached the var. *polaris*, the specimens subjected to the lower temperatures being generally darker, and the blue crescents were more intense in colour. In conclusion, Mr. Merrifield said a temperature of 47° seemed to stunt the size, and produced a large proportion of cripples; higher temperature than this seemed more conducive to health and vigour. It had been suggested that the results he had obtained were attributable to the unhealthy condition to which the pupæ were exposed, but this was not at all a correct explanation. In the 172 specimens which he exhibited, 150 were not cripples; extreme temperatures produced crippling, but moderate temperatures were quite sufficient to account for the extreme difference of colouring. Mr. Fenn said he had, since 1859, paid great attention to the earlier stages of Lepidoptera, and he assumed that variation was either natural or artificial; that natural variation

might be divided into three nearly equal causes, *viz.*, heredity, moisture, and natural selection. In artificial variation the causes might generally be said to be abnormal or diseased; by disease he meant a general weakening of the constitution by unnatural influences; the least deviation from natural conditions might lead to variation. Mr. Fenn then remarked that the temperature necessary to alter the colour, *viz.*,  $87^{\circ}$  to  $57^{\circ}$  and  $57^{\circ}$ , alone was quite sufficient to put at least all our winter, spring, and autumn insects entirely out of action. *E. autumnaria*, one of the species relied on, Mr. Fenn had had considerable experience in breeding, and in the series he exhibited there were many paler and many darker than any shown by Mr. Merrifield, and the larvæ and pupæ had been kept under usual conditions, and the greater portion of them followed the parent forms. In conclusion, he said such variation as was shown by Mr. Merrifield was practically impossible in a state of nature, unless it was the result of disease. Messrs. Weir, Adkin, Tugwell, Carrington, Dobson, Barrett, and Tutt continued the discussion, the last-named gentleman following Mr. Fenn in attributing the variation to disease, and that to a large extent it was caused by preventing the proper development and formation of the colouring pigment. He thought the action of temperature was indirect, and produced variation by interfering with the normal development. Mr. Merrifield agreed with many of Mr. Fenn's observations, and thought most of them were consistent with the results obtained in his experiments, as reported by him. In any case, there could be no doubt that, in the species principally operated on by him, temperature, applied in such moderation as not to affect the healthy appearance of the insect, produced great uniformity; conspicuous differences in colouring. There were other species in which no considerable effect was produced, unless the temperature was so extreme as to cause a certain amount of crippling or imperfect development. The meeting closed with a vote of thanks to Mr. Merrifield, proposed by Mr. Fenn and seconded by Mr. Jenner Weir.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*April 11th, 1892.*—S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. W. Webster, of St. Helens; C. F. Johnson, of Stockport; and the Rev. C. J. Buckmaster, of Wigan, were elected members. Mr. J. E. Robson, of Hartlepool, editor of the 'British Naturalist,' read a paper entitled "Melanism and its Theories." After reviewing the various theories of previous writers for the tendency of certain species to darken, he said it was his belief that no single theory could account for the phenomena of melanism now going on; and while agreeing with Lord Walsingham that the dark colour of insects in cold and snowy regions was due to that colour being most suitable, he also considered that the increase of smoke and dirt would, by obscuring the rays of the sun near large towns, also tend to produce melanism by the laws of natural selection. The paper was illustrated by numerous examples of melanic forms of Lepidoptera and Coleoptera; Mr. C. A. Briggs' very dark *Sphinx ligustri*; the President's black *Boarmia cinctaria* and *B. roboraria*; and Mr. Robson's very dark *Arctia menthastri*, *Odontopera bidentata*, and *Chortobius pamphilus* being specially fine; but the little box that attracted most attention contained, side by side, Mr. Briggs' fine variety of *Arctia caia*, with faint buff-coloured markings on the fore wings, black *bicolor*-like spots occupying the centre, the under wings being all red; and Mr. Capper's variety of the same species, the fore wings of which are immaculate, with the exception of one



black spot near the centre, the hind wings being normal. Mr. Newstead exhibited types of *Prosporophora dendrobii*, Doug. MS., very remarkable Coccid from Demerara, descriptions of which will shortly appear. Mr. Collins, on behalf of Messrs. C. R. Billups and J. Dutton, of Warrington, exhibited *Dytiscus dimidiatus*, male and female, captured in the fens in 1891, after being lost sight of for eight years; and *Silpha atrata* var. *subrotundata* from the east and south-west coast of the Isle of Man in February, 1892.—F. N. PIERCE, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 17th*, 1892.—A meeting of six old members of the Society was held at Mr. Jones's, 59, Trumpington Street, to discuss the possibility of setting the Society going again, the last meeting having been held March 8th, 1889. The advisability of altering some of the existing rules was discussed, one item being the changing the name of the Society from the "Cambridge Entomological Society" to the "Cambridge Entomological and Natural History Society." As several members of the University were desirous of joining, and the anniversary meeting had always been held in February, it was decided that the next meeting should be the anniversary meeting, and that all gentlemen willing to join should be invited to attend for the purpose of being elected members, and to take part in the subsequent business of electing officers for the year, and considering the proposed alterations of the rules.

*February 26th, Anniversary Meeting.*—Mr. G. H. Bryan, M.A., President, in the chair. In the absence of Mr. Theobald, Mr. Farren acted as Secretary. Messrs. A. M. Moss, A. Rashleigh, H. S. Fitzroy, W. Morrow, C. Woodhouse, M. White, C. Wells, W. H. Powell, H. J. P. Smith, W. C. Feetham, H. Eltringham, R. Ll. Hodgson, A. S. Shrubbs, and G. Watkinson were elected members. The proposed alterations in the rules having been made, the officers for the ensuing year were elected, as follows:—President, Mr. A. M. Moss; Vice-President, Mr. G. H. Bryan, M.A.; Hon. Secretary and Treasurer, Mr. W. Farren, F.E.S.; Hon. Librarian, Mr. A. Jones; and as other members of Council, Messrs. C. Woodhouse, C. Wells, and H. Eltringham.

*March 11th.*—Mr. A. M. Moss, President, in the chair. Messrs. W. G. S. Malim, H. C. T. Langdon, and H. V. Bull were elected members. Mr. F. V. Theobald, F.E.S., sent for exhibition two cases of Diptera; one showing the life-history of the "daddy-longlegs" (*Tipulæ*), *T. oleracea*, *T. gigantea*, and *T. lutescens*; and the other being a case of *Tabanus bovinus* and *T. asilus*; also a box of living specimens of the "corn and rice weevils" (*Calandra granaria* and *C. oryza*). The Secretary read some notes on the exhibit by Mr. Theobald. The specimens of *Tabanus bovinus* exhibited were from Switzerland, where they attack the horse to a dreadful extent; they are also common in parts of England, notably the New Forest, Sussex, &c. *Calandra* (corn and rice weevil) are very destructive to stored wheat, barley, oats, and rice, and, to some extent, maize, especially abundant in Calcutta wheat, but also coming from other parts. The weevil lays its eggs one on each grain, and the young larva bores its way in, where it assumes the pupal state. Mr. Jones read a paper on "Killing and Setting Lepidoptera;" discussion ensued, chiefly on the several methods of killing, Mr. Jones and Mr. Farren recommending the use of ammonia in preference to cyanide. A vote of thanks to the author for his interesting paper concluded the meeting.—WILLIAM FARREN, *Hon. Sec. and Treas.*

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[No. 349.

## COLOUR-VARIATION IN THE OVA OF *BISTON HIRTARIA*.

BY ROBERT ADKIN, F.E.S.

ON 29th April, last year, I took a fairly fresh female *Biston hirtaria* at rest on a wall near here, and being desirous of rearing the species from ova, I put her aside in a large chip-box covered with lino; and upon examination, after two or three days, I found that she had deposited a considerable number of ova in cracks in the box; these were then of the colour that I have been accustomed to regard as natural to this species, a deep green. During the next day or two further ova were deposited; these were, at first, a pale golden yellow, but afterwards turned to a deep orange, which colour they retained; and a few that were deposited still later remained of the pale colour, without showing any perceptible change. On the 30th of the same month I took a much worn female from the bole of a lime tree, and, as she showed some variation from the one previously taken, I kept her, also, for ova; evidently the bulk had already been parted with, but of those that I obtained, which were at first all of the pale golden yellow colour, the earliest deposited changed to a yellowish green, the next to a pale orange, and the latest remained yellow, as in the former case. I concluded that those that had not changed colour would prove infertile, but with a view to satisfying myself on this point, I carefully divided the proceeds of each moth into three lots,—marked respectively, No. 1. A; No. 1. B; No. 1. C; and No. 2. A; No. 2. B; No. 2. C,—according to the order in which the ova were deposited. In due time each lot became almost black, and subsequently hatched, but not in the order in which they had been laid, as will be seen by the following table:—

No. 1. A.	Turned colour,	June 2;	hatched,	June 3.
B.	„	„	June 8;	„ June 10.
C.	„	„	June 4;	„ June 5.



No. 2.	A.	Turned colour,	June 3;	hatched,	June 4.
	B.	"	June 8;	"	June 10.
	C.	"	June 5;	"	June 8.

In each case, therefore, the ova that had remained yellow hatched before those that assumed the orange colour. For some time I managed to keep the whole of the larvæ, but as they grew their prodigious appetites rendered such a proceeding impossible, and from time to time I set some of each lot at liberty, in order to give such as were retained a chance of feeding up. I was, therefore, unable to obtain a complete record of the imagines resulting from the various batches; but I have this spring reared a sufficient number of each to lead me to suppose that there would have been no difference between them, either as regards the proportionate number of each sex, or the robustness or coloration of the individuals.

Lewisham, May, 1892.

## A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 118).

### LEPIDOPTERA.

*Phorodesma pustulata*, Hufn., Mill Hill, two in the garden at Goldbeaters (South); Bishop's Wood (Vaughan).

*Iodis lactearia*, L., Bishop's Wood (Godwin); Mill Hill (South); Highgate Wood (Vaughan); Whitton (Rendall); Harefield, fairly common (Wall); Harrow-Weald, common (Rowland-Brown).

*Hemithea strigata*, Müll., Bishop's Wood, Kingsbury (Godwin); Mill Hill (South); Bedford Park (J. Gray); Highgate Wood (Vaughan); Whitton (Rendall); Harefield, taken sparingly (Wall); Chiswick, on the wing at dusk (Sick); Ealing (Adye); Old Oak Common (Mera); Harrow-Weald (Rowland-Brown).

### Subf. *Ephyrinæ*.

*Zonosoma punctaria*, L., Bishop's Wood (Godwin); Whitton (Rendall). *Z. porata*, Fb., Bishop's Wood (Godwin); Mill Hill, one in the garden, 1876 (South).

### Subf. *Acidaliinæ*.

*Asthena candidata*, Schiff., Bishop's Wood, Kingsbury, Old Oak Common (Godwin); Mill Hill (South); Highgate Wood (Vaughan); Pinner (Watts). *A. luteata*, Schiff., Mill Hill (South); Harefield, taken sparingly (Wall).

*Acidalia dimidiata*, Hufn., Bishop's Wood (*Godwin*); Mill Hill, common in a hedgerow (*South*); Dartmouth Park (*Vaughan*); Harefield, rather common (*Wall*); Chiswick, common, larva once (*Sich*); Hampstead, common (*Watts*). *A. bisetata*, Hufn., Bishop's Wood (*Godwin*); Mill Hill (*South*); Whitton (*Rendall*); Chiswick, common on the wing at dusk (*Sich*); Hampstead, common (*Watts*). *A. rusticata*, Fb., Harefield, one taken in 1890 (*Wall*). *A. humiliata*, Hufn. (= *dilutaria*=*interjectaria*), Mill Hill (*South*); Chiswick, common on the wing at dusk (*Sich*); Finchley (*Shepherd*). *A. virgularia*, Hb. (= *incanaria*), Mill Hill, at rest on summer-house in the garden (*South*); Highgate (*Vaughan*); Whitton (*Rendall*); Chiswick, common (*Sich*); Hampstead, common (*Watts*); Dalston (*Prout*); [St. John's Wood, Kingsbury (*South*)]. *A. marginepunctata*, Göze. (= *promutata*), Chiswick, once at rest (*Sich*). *A. immutata*, L., said to have been taken at Enfield\* (see *Pract. Nat.*, 1883, p. 131). *A. imitaria*, Hb., Bishop's Wood (*Shepherd*); Mill Hill, common about a privet hedge, bred from larvæ found on privet (*South*); Whitton (*Rendall*). *A. remutaria*, Hb. (= *remutata*, Newm.), Bishop's Wood, common (*Godwin*); Mill Hill (*South*); Pinner Woods (*Watts*). *A. aversata*, L.† [banded form], London (*Rendall*, *Entom.*, 1887, p. 200). *A. aversata*, Bishop's Wood (*Godwin*); Mill Hill (*South*); Bedford Park (*Ckll.*); Dartmouth Park (*Vaughan*); Whitton (*Rendall*); Harefield, rather common (*Wall*); Chiswick, common, larva once on *Nepeta glechoma* (*Sich*); Hampstead, common (*Watts*); Harrow-Weald (*Rowland-Brown*); Tottenham (*Prout*). *A. emarginata*, L., Mill Hill, in various hedgerows (*South*); Whitton (*Rendall*); Harefield, a few in 1887 (*Wall*). *A. herbariata*, Fb., Cannon Street, London (*Meek*, *Entom.*, 1879, p. 226).

*Timandra amataria*, L., common (*Godwin*); Mill Hill, common in ditches (*South*); Highgate (*Vaughan*); Whitton (*Rendall*); Harefield, taken freely some seasons (*Wall*);

\* In September, which, if correct, would indicate a second brood. Newman gives only June.—T. D. A. C.

† The true *A. aversata*, popularly known as the "ribbon-wave," has the space between the two central transverse lines filled up with darker, and is the typical form. Stephens describes and Wood figures it under this name, but Guenée refers the banded form to *lividata*, Linn., representing his *A. aversata* var. A; and he uses *aversata*, Linn., for the commoner form without central fascia. Stainton mentions both forms under the name of *aversata*. Staudinger appears to have been doubtful whether the common form of *aversata* was properly referable to *remutata*, Linn., *Syst. Nat.* x. 528, and so gave to this form the name of *spoliata* (Horræ, *Soc. Ent. Ross.*, 1870, p. 150). Newman, in his 'British Moths,' p. 82, figures the plain form as var. *remutata* and the banded form as var. *aversata*. The typical form of *aversata* is, perhaps, less common than the *spoliata* form in many of the localities cited above; but, although the fact has not been indicated, it probably occurs in all of them; certainly at Bishop's Wood, Mill Hill, Harefield, Harrow, Kingsbury, Hampstead, and Tottenham.—Ed.



Chiswick, once on the wing (*Sich*); Hendon, 1879 (*Watts*); Finchley (*Shepherd*); Oxhey Lane (*Rowland-Brown*); [Harrow and Pinner, common (*South*).]

*Geometridæ* subf. *Caberinæ*.

*Cabera pusaria*, L., Mill Hill (*South*); Bishop's Wood (*Godwin*); Isleworth (*Meyers*); Chiswick, common, larva on birch (*Sich*); Oxhey Lane\* (*Rowland-Brown*); Hampstead (*Watts*); Harefield, common (*Wall*); Ealing (*Adye*). *C. rotundaria*, Haw., Bishop's Wood (*Godwin* and *Shepherd*). *C. exanthemata*, Scop., Mill Hill (*South*); Bishop's Wood (*Godwin*); Oxhey Lane (*Rowland-Brown*); Harefield, common (*Wall*); Hammersmith (*Mera*); Ealing (*Adye*).

*Bapta temerata*, Hb., Bishop's Wood, common (*Godwin*). *B. bimaculata*, Fb., Harefield, one in 1889 (*Wall*).

Subf. *Macariinæ*.

*Halia vauaria*, L., Mill Hill (*South*); generally distributed, on lamps, palings, walls, &c. (*Godwin*); Balls Pond, Islington, Kentish Town, Hampstead (*Vaughan*); Bedford Park (*Chkl.*); Chiswick, common, larva on currant (*Sich*); Whitton (*Rendall*); Oxhey Lane (*Rowland-Brown*); South Hampstead, common (*Watts*); Harefield, common (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*); [St. John's Wood (*South*)].

Subf. *Fidoniinæ*.

*Strenia clathrata*, L., Mill Hill (*South*).

*Panagra petraria*, Hb., Old Oak Common (*Godwin*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Graemes Dyke, Harrow-Weald (*Rowland-Brown*); Hampstead Heath (*Watts*).

*Bupalus piniaria*, L., Whitton (*Rendall*); Graemes Dyke (*Rowland-Brown*); London (*Whittle*, Entom. 1887, p. 211).

*Sterrha sacraria*, L., Swains Lane, Highgate (*H. Pryer* fide *Vaughan*); near Uxbridge (*Benbow*, Entom. 1878, p. 21).

*Aspilates gilvaria*, Fb., Willesden (*Klein*); Oxhey Lane (*Rowland-Brown*).

Subf. *Zereninæ*.

*Abraxas grossulariata*, L., Mill Hill (*South*); generally distributed (*Godwin*); Kentish Town (*Vaughan*); Bedford Park (*Fenn*); very common at Chiswick, larva abundant, especially on cultivated evergreen, *Euonymus* (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); common (*Watts*); Harefield,

\* Mr. Rowland-Brown heads his list, "Middlesex," but gives several species from Oxhey Lane, which is just in Hertfordshire, according to the Ordnance Survey Map. I leave them in the list, as the lane seems to extend into Middlesex. Last year (Entom. xxiv. 69) *Pterostoma palpina* is recorded only from Oxhey Lane; but if this is in Hertfordshire the species may still be kept in the Middlesex list, having been taken at Hounslow (*W. Powley*) and Willesden (*Klein*).

too abundant (*Wall*); Hammersmith (*Mera*); Ealing (*Adye*); Clapton (*Bacot*); Dalston (*Prout*); Isleworth, pupa on currant (*Ckll.*);\* [St. John's Wood, generally common (*South*)]. *A. grossulariata* ab. *lutea*, *Ckll.*, *Entom.* xxii. p. 2. Mr. Prout writes that he has a specimen of this, taken in his garden at Greenwood Road, Dalston.

*Ligdia adustata*, Schiff., Chiswick, once at *Tanacetum vulgare* (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath, 1880, &c. (*Watts*); Harefield, not common (*Wall*); Hammersmith (*Mera*); [Kingsbury (*South*).]

*Lomaspilis marginata*, L., Mill Hill (*South*); generally common, especially at Bishop's Wood (*Godwin*); Chiswick, larva on Lombardy poplar (*Sich*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath (*Watts*); Harefield, rather common (*Wall*) abundant near Ealing (*Adye*); [Northwood (*South*).]

#### Subf. *Hyberniinæ*.

*Hybernia rupicaprararia*, Hb., Mill Hill (*South*); generally common (*Godwin*); Millfield Lane (*Vaughan*); Chiswick, not often taken (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead (*Watts*); Harefield, abundant (*Wall*); Bishop's Wood (*Shepherd*); [Kingsbury (*South*)]. *H. leucophaæaria*, Schiff., Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Chiswick, occasionally (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hyde Park and Hampstead (*Watts*); Harefield, common (*Wall*); near Acton (*Mera*). *H. aurantiaria*, Esp., Bishop's Wood (*Godwin*); Harefield, common (*Wall*); Tottenham (*Prout*). *H. marginaria*, Bork. (= *progemmaria*), Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Bedford Park, April, 1891 (*Ckll.*); Chiswick, common, larvæ on birch and plum (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead, common (*Watts*); Harefield, abundant (*Wall*); near Acton (*Mera*); Isleworth, a form intermediate between the type and the var. *fuscata*, Mosley (*Ckll.*). *H. defoliaria*, Clerck, Bishop's Wood (*Godwin*); Chiswick, common, larva on elm and pear trees (*Sich*); Whitton (*Rendall*); Stanmore (*Rowland-Brown*); Harefield, plentiful (*Wall*); Bishop's Wood and Highgate (*Shepherd*); Ealing (*Adye*); Dalston (*Prout*). *H. defoliaria* ab. *suffusa*, *Ckll.*, † *Entom.* 1886, p. 37. Mr. Sich (*Entom.* 1888, p. 112) refers to a dark reddish form at Chiswick.

*Anisopteryx æscularia*, Schiff., Mill Hill, female may be found on hedges at night (*South*); generally common, especially

\* From an Isleworth specimen I bred an Ichneumonid, black, about 14 millim. long, wings dusky hyaline, with a rather large dark stigma.

† This is apparently hardly to be separated from a variety named *obliteraria*, concerning which see A. H. Waters, 'Nat. World,' Jan. 1886, p. 8.



Regent's Park (*Godwin*); Hampstead (*Vaughan*); Chiswick, fairly common at rest (*Sich*); Whitton (*Rendall*); Oxhey Lane (*Rowland-Brown*); Harefield, not common (*Wall*); Highgate (*Shepherd*); Ealing (*Adye*).

Subf. *Larentiinae*.

*Cheimatobia brumata*, L., Mill Hill (*South*); generally common (*Godwin*); Hampstead (*Vaughan*); Chiswick, abundant, larva in young shoots and buds of fruit and other trees (*Sich*); Whitton (*Rendall*); Harrow-Weald, very common (*Rowland-Brown*); Harefield, exceedingly abundant (*Wall*); Highgate (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*). *C. boreata*, Hb., Bishop's Wood (*Godwin*).

*Oporabia dilutata*, Bork., Mill Hill (*South*); generally common, especially Hampstead (*Godwin*); Isleworth (*Fenn*); Chiswick, occasionally, also larva (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Harefield, common (*Wall*); Highgate (*Shepherd*); Clapton (*Bacot*). *O. dilutata* var. *obscurata*, Stgr. Mr. Shepherd wrote me that he had taken this at Hampstead; and Mr. Sich refers to a suffused form at Chiswick (*Entom.* xxi. 112).

*Larentia didymata*, L., Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Hampstead, common (*Watts*); Harefield, common (*Wall*); Dalston (*Prout*); [Northwood (*South*)]. *L. multistrigaria*, Haw., Mill Hill, at rest on palings (*South*); Hampstead Heath (*Godwin*); Whitton (*Rendall*); Hampstead Heath, 1882 (*Watts*). *L. viridaria*, Fb. (= *pectinitaria*), Bishop's Wood (*Godwin*); Whitton (*Rendall*); Harefield, occasional (*Wall*); [Northwood, common (*South*)].

(To be continued.)

## NOTES ON BRITISH LEPIDOPTERA.

By RICHARD SOUTH.

### THE GENUS MELANIPPE.

(Continued from p. 114.)

#### MELANIPPE GALIATA.

The ground colour of fore wings is generally chalk-white, with a greyish patch at the base, and more or less tinged with ashy grey on the outer marginal area. The central band, which has a decided projection on its outer edge, is usually divided transversely into three parts by thin black or blackish lines; the median portion is always the widest, and, as a rule, darker than the narrow inner and broader outer portions, which are alike in

colour; the blotch towards apex is a variable quantity, sometimes very well defined, but often only represented by a patch or two of darker scales; in the strongest marked specimens there is a dark transverse line from the inner edge of this blotch to inner margin, and a whitish submarginal line touches its outer edge, and intersects a dark grey cloud-like spot near the middle of the marginal area; the inner portion of this spot is often separated into two dots.

Considerable diversity is exhibited in the composition of the central band, but it is hardly necessary to refer to all the minor modifications of this and other characters, as it will suffice for present purposes to mention the more striking points of variation. In some specimens from Ventnor the base of fore wings is tinged with grey, limited by a slightly darker line, and the central band is pale grey, enclosed and traversed by blackish lines; black discoidal spot distinct. Other specimens from the same locality, and also from Folkestone and Eastbourne, have the median portion of the central band rather bluish grey, and the narrow inner and broader outer portions tinged with brownish; the basal patch in these examples is almost as dark as the central band, and is intersected by a grey suffused whitish band; the outer marginal area is more or less suffused with greyish.

Mr. Porritt very generously sent me a series of specimens from Yorkshire. These have a very dark grey, almost blackish, basal patch; the central band is rather wider than usual, bluish black in colour, and the transverse intersecting lines are hardly traceable; the outer marginal area is distinctly suffused with greyish, and the white submarginal line is unusually distinct; the apical blotch and cloud below are well defined. The hind wings are fuliginous grey, with a whitish double central line and a single submarginal line.

I understand that this form of *galiata* is very local, and I am inclined to think that it is the *unilobata* of Haworth, which was also from Yorkshire.

*Quadriannulata*, Haworth, appears to be a rather uncommon aberration of *galiata*. Stephens (Ill. Brit. Ent. Haust. iii. p. 223) describes it as having the "anterior wings ashy brown at the base, then with two geminated waved fuscous strigæ, and between these a narrow fascia of four rounded white spots, edged with black; then a broad fuscous-ash space or fascia, terminating in a geminated fuscous striga, with a black spot within towards costa; behind this the wings are whitish, a little clouded with cinereous and darker shades and waves, with a small emarginate black spot towards apex of costa; posterior wings pale cinereous white, with the border rather darker. Cambridgeshire and coast of Devon."

Wood figures this form (565) and also *unilobata* (564) in his 'Index Entomologicus.' In the last-named figure the central



band is fuscous, and does not agree with the Yorkshire specimens of *galiata* referred to above.

#### MELANIPPE FLUCTUATA.

Specimens of this species, captured even in a London garden, exhibit considerable variation in colour and markings of fore wings. First, as regards colour: this is most frequently whitish or greyish, but specimens are sometimes more or less tinged with ochreous, and one or two taken by myself in my garden are nearly as much suffused with fuliginous as examples of the species from Aberdeen, presently to be more particularly referred to. Then as to the markings: perhaps the largest number have simply the typical dark patches at base, middle of costa, and towards apex; but specimens with an entire and well-defined blackish central band are often obtained, together with intermediate forms, which show the gradual development, stage by stage, as it were, of the band. The banded form is figured by Wood and Newman, and is the var.  $\beta$ , Haworth, and  $\alpha$ , Guenée. Besides graduation towards the fully-developed band, the costal blotch becomes modified in the direction of complete effacement; but so far I have not seen a specimen without at least a remnant of this mark. I have taken two specimens in St. John's Wood, in both of which the costal blotch is reduced to very slender proportions. One of these has the usual blotch represented by a blackish transverse bar, which is slightly contracted above the middle, and extends from the subcostal to the median nervures; this is the var. *costovata*, Haw. In the other specimen the costal mark is somewhat triangular in shape. The costal half of the central band usually contains some pale irregular-shaped marks, the upper one enclosing the black discoidal spot. The inner edge of the band is often indented, but is usually entire and forms a curve; the outer edge has a more or less distinct tooth-like projection before the middle, and below this the band is often contracted to about half its original width. The twin black spots below apical blotch are generally present, although not invariably so, but vary in size and definition. A very wavy black line starts from the inner edge of apical blotch, but does not always attain the inner margin. Hind wings fuscous grey, with a small black spot and darker transverse line before the middle, and some darker and paler lines and bands on the outer half of the wing.

Aberdeen specimens of *M. fluctuata* are grey, tinged sometimes with brownish, and generally suffused with fuliginous. The central band is continued from costa to inner margin, and bordered on each side by a narrower whitish band, which is intersected by a darker line; submarginal line whitish, edged internally with darker. These whitish bands and lines are present in English specimens, but, owing to the paler ground

colour, are not conspicuous. Millière, in 1869 ('Iconographie,' iii. p. 267, pl. 131, fig. 7), described and figured a form of *fluctuata* under the name of var. *neapolisata*. He says that in the neighbourhood of Naples this variety is the dominant form of the species, but he appears to have met with males only; and it is worthy of note that he says of these that the antennæ are more strongly pectinated than in typical males. In 1887 Millière received Aberdeen specimens of *fluctuata*, and figured a female specimen as this sex of his var. *neapolisata* (Ann. Soc. Ent. Fr. (6), vii. p. 218, pl. v. fig. 7, ♀). Probably Millière was correct in his identification, but if the Aberdeen form of *fluctuata* is identical with that from Naples in colour and marking, the males do not agree in the character of the antennæ, as the Aberdeen males of *fluctuata* have these organs just exactly as much pectinated as males of the type form, and no more. It seems a pity that the type female of var. *neapolisata* was not obtained from the same locality as the male of that form.

Mr. McArthur informs me that *fluctuata* is very rare in the Shetlands, and that the specimens are dark in colour, but the central band is not complete. Specimens from Dumbarton and Clydesdale, in my series, have the wings suffused with dark grey, but they are not so dark as those from Aberdeen. The central band is generally continued to inner margin, but it is paler than in typical specimens; the whitish band following the fascia is very conspicuous towards costa. Arran specimens are "very dark, and much suffused with black" (Weir, Entom. xv. p. 253).

I have but one example of the species from Ireland (kindly sent to me some years ago by Mr. P. Russ, of Sligo); this is identical with Dumbarton specimens. Mr. Fitz-Gibbon, of Dublin, has most kindly sent me for examination a very pretty specimen, which he captured on the blossom of Japanese privet at Howth, August, 1891. This example is rather smaller than the largest Aberdeen specimen in my series; the ground colour is silvery grey, and the central band unusually broad, especially the costal half, which contains a large patch of the ground colour enclosing a black dot.

Seeing how very variable *M. fluctuata* is in tone of colour and definition of marking, it does not seem advisable to trouble ourselves very much about names for the various forms. At the same time, one may find almost endless amusement in endeavouring to arrange and group into detachments the numerous varieties of this species.

Var. B, Guenée=var. ♂, Haworth, has the fore wings deep olive-grey, bands and marks obscured by the dark ground colour. Hind wings uniform grey. Duponchel represents a form intermediate between vars. A and B of Guenée.

Var. C, Guenée. All the lines of the fore wings are evane-



scent, except the submarginal; the blotches are as in the type, but more restricted.

Var. *acutangulata*, from the Caucasus (Rom. sur Lep. iii. p. 2, pl. i. figs. 1a, 1b, 1887), has the central transverse band continued to the inner margin; the angular projection or tooth on the outer edge of this band is rather more pointed than usual. I believe this form is not uncommon in Britain.

My smallest example is a London one, and measures barely 11 lines in expanse; the largest specimen in my collection is from Aberdeen, and expands 1 inch 5 lines.

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## SPRING LEPIDOPTERA IN ITALY.

By H. ROWLAND-BROWN, M.A.

THE following list of spring Rhopalocera is compiled from hasty notes jotted down in railway carriages, and upon two or three country walks made outside Florence and Rome. To the British observer of nature the marvellous southern spring, seen for the first time in all its abundant glory, is a revelation never to be forgotten. It would seem as if nature lavished her whole bounty upon the April and May of North and Central Italy, leaving the later months destitute of those exquisite wild flowers which, earlier in the year, greet the eye at every turn in town and country alike.

I saw the first butterfly (March 23rd) at Biasca, a small station on the Italian slope of the St. Gotthard Pass, flying over the snow; it was *G. rhamni*; and every foot the railway descended the same insect became more and more plentiful. At Bellinzona, *P. rapæ* was already out, flying over the white crocus meadows that bordered upon the line. On March 24th I walked from Lugano to Melide along the high road, the banks of which were covered with primroses, white violets, periwinkles, and anemones; whilst the willows by the lake side were already in leaf, and the camelias flowering abundantly in the villa gardens. *V. egea*, fresh from the chrysalis, was everywhere; and occasionally *V. polychloros* and a few *P. brassicae*. Between Como and Milan the fields were white with snowdrops, but the weather turning very wet I saw no more insects until I arrived, March 31st, at Florence. By the side of the railway from Bologna to Florence, across the Apennines, the green hellebore and great spurge were flowering in the already half-dried-up torrent beds, and the woods were putting out their leaves. Walking to Fiesole on April 1st, I noticed many butterflies flitting over the rose-maries and already radiant rose bushes of the old hill town.

In addition to those I have already mentioned, I came across a single *G. cleopatra*, *V. atalanta*, *V. cardui*, *A. euphrosyne*, and

the ubiquitous *M. stellatarum*. In the Cascine, the fashionable park of Florence, *L. argiolus* and *V. egea* were flying in profusion round the bay trees; but, oddly enough, during the five weeks I was in Italy, I never once came across a hybernated specimen of *V. urticæ*; and on one occasion only at Rome (on the Palatine) did I see *V. io*. I amused myself one day, when visiting the picture galleries, with studying the Lepidoptera of the Old Masters. Butterflies, however, play a very insignificant part, even in the still-life pictures of the Dutch school. Among the Italians I could find no single painting of any moth or butterfly, though in one of the monasteries, I think it was at Certosa near Florence, I saw a very passable *A. atropos* done upon the wall of one of the cells. Ruysch Rachele occasionally introduces *V. atalanta*, *P. brassicæ*, and even *E. cardamines*; and in a Van Huysum I discovered a really fine *P. napi*. In Rome, the most favoured locality for Lepidoptera was the Palatine hill, which is a perfect garden of flowers, wild and cultivated. The slopes are covered with giant fennel plants, where I was not surprised to find (April 16th) *P. machaon* in abundance, together with *P. megæra* and *C. pamphilus*, and literally hundreds of *G. rhamni* and "the whites." It was not, however, until I went to Tivoli that I realized the full richness of the Italian insect-fauna. In Hadrian's villa (April 22nd), for the first time in my life, I gazed upon *P. podalirius* on the wing, evidently just emerged, and in the most perfect condition. With the help of a Kodak camera I was able to take away my first impressions of this insect in a very practical manner. In the woodland glades, *P. egeria* was to be seen with *V. c-album*, *N. lucina*, and one or two *L. duponcheli*, a very feeble flyer, yet hardly ever settling. In the sunny brakes that cover much of the palace of the Cæsars, *T. rubi*, *G. cleopatra*, *P. machaon*, *E. cardamines*, and the spring fritillaries, *A. selene*, *A. euphrosyne*, and *A. dia*, together with *C. pamphilus*, might have been taken in any quantities, but having no apparatus with me I could only watch and admire the countless hundreds of insects that passed before my eyes. Of the wild flowers it would be impossible to speak with too much enthusiasm; but to the English eye the simultaneous appearance of what, with us, are spring and midsummer flowers respectively, is, to say the least of it, rather confusing.

As I said before, these are only hasty jottings, but they may prove of interest to readers of the 'Entomologist'; and anything that may help to induce our native collectors to disregard their insularity, and extend the field of the observations and operations to the wider study of European Rhopalocera, must be of service. Perhaps, therefore, a word of advice will not be out of place to the innumerable tourists who are attracted every spring to Italy and the Riviera; and that is, take your collecting-boxes with you.



The subjoined list of twenty-four species will show at a glance some of the insects commonly to be taken in March and April; and there are many others at this season, I have no doubt, which I either missed or was not fortunate enough to encounter:—*Papilio podalirius*, *P. machaon*, *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Thecla rubi*, *Lycæna argiolus*, *Euchloë cardamines*, *Leucophasia duponcheli*, *Gonepteryx rhamni*, *G. cleopatra*, *Vanessa atalanta*, *V. egea*, *V. c-album*, *V. cardui*, *V. polychloros*, *V. io*, *Nemeobius lucina*, *Pararge egeria*, *P. megæra*, *Argynnis selene*, *A. euphrosyne*, *A. dia*, *Cænonympha* (*Chortobius*) *pamphilus*.

Oxhey Grove, Harrow-Weald, May 4, 1892.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 93.)

The genus *Ariola*, Walk., contains very heterogeneous material: thus the type *A. cælisigna* appears to me to be a *Lithosiid*; but of this I am at present uncertain, though the neururation seems to me to point rather to that family than any other. *A. dilectissima* and "*Acontia*" *dicycla* belong to *Pachylepis*, Feld., and are undoubtedly Glottulidæ; *A. pulchra*, Butl., is a Micro-Lepidopteron probably allied to *Davendra*; *A. continua* and *deflexa*, Walk., from Borneo, are sexes, and belong to the Deltoid genus *Lazandra* = *Labanda*, Walk.; and *A. saturata* is a *Paracrama*, and belongs to the Nycteolidæ. *A. includens* is, at present, unknown to me.

*Thalpochares mundula*, Zell., appears to be a Deltoid allied to *Rivula*.

I followed Lederer, Staudinger, Walker, and others, in placing *Argyrospila* (and consequently *Micardia*) in the Leucaniidæ. An examination of the wing-veins proves clearly that both *Argyrospila* and *Micardia* are Acontiidæ: in general aspect they are more like Eublemmidæ.

*Anthophila indecisa*, Walk., appears to belong to the Hypogrammidæ, in Walker's sense of the family; the neururation corresponds: the specimen is rubbed and faded almost beyond recognition, which accounts for its specific name.

*A. divergens*, Walk., and *A. erecta* = *Atethmia inusta* = *A. subusta* = *Laphygma trilinea* = *Anomis dispartita* = *Poaphila congesta* are Heliothidæ of the genus *Lygranthæcia*, which is consequently synonymous with *Atethmia*, Hübn.

*Dyrzela cara*, Butl., from Japan, is a *Cosmia* nearest to *C. diffinis*, L.: the type of *Dyrzela* belongs neither to the Acontiidæ nor Eublemmidæ, but will come much later in the arrangement.

*Xanthodes*? *arcuata* is probably an *Avitta*, and belongs to the *Herminiidæ*; and *Acontia*?? *ræselloides*, Walk., is a *Sarrothripa*.

*Thalpochara orba*, Grote, is a *Hyphenid*; it is identical with Walker's *Hydrelia*? *latipalpis*.

*Micra tineoides*, Walk., is a *Lithosiid* allied to *Sorocostia vetustella*.

Of reputed *Acontiidæ* hitherto not mentioned *A. discalis* is a *Tineid*. *A. discoidalis* = *venustula* is a *Spragueia*, as also is *A. decisa*. *A. olivacea* = *Anthophila nebulifera* is a genus of *Eublemmidæ* near to *Eublemma*, but I think distinct. *A.*? *nigripalpis* is so much worn, rubbed, and faded that it is impossible to be certain of its genus; it is an *Acontiid*, so far as can be judged by its venation, and may be *Hiccodes dosaroides* of Moore, which it resembles in general colouring and size; but the markings are almost entirely obliterated. *Tarache destituta* is an *Ozarba*. Under *Erastria* Walker described two *Hadenids*,—*E. varia* = *Oligia festivoides*, Guén., and *E.*? *basistigma*, which is also an *Oligia*.

#### OZARBA, Walk.

##### *Ozarba punctigera*.

*Ozarba punctigera*, Walker, Lep. Het. Suppl. 2, p. 685 (1865).

*Grammodes excavata*, Walker, l. c., 3, p. 973 (1865).

Asia and Australia. Types in Coll. B. M.

*Miana honesta*, Walk., is an allied species.

#### ACANTHOLIPES, Led.\*

##### *Acantholipes circumdata*.

*Hydrelia*? *circumdata*, Walker, Lep. Het. xv. p. 1763 (1858).

*Docela vetustalis*, Walker, l. c., Suppl. 4, p. 1258 (1865).

Congo. Types in Coll. B. M.

#### EUBLEMMA, Hübn.

##### *Eublemma rosita*.

*Micra rosita*, Guenée, Noct. ii. p. 245, n. 1036 (1852).

*Micra derogata*, Walker, Lep. Het. xii. p. 825, n. 17 (1857).

Australia, Formosa, Ceylon, Bombay. Coll. B. M.

The following group differs somewhat in character from typical *Eublemma*, but appears not to differ structurally: it consists of *E. pannonica* from Europe, *secta*, *leonata*, *hemirhoda* (and two other undetermined species in the Museum series), from Java, New Guinea, Australia, &c.

\* It is doubtful whether this genus is actually distinct from *Microphysa*; in any case it is a convenient name for a group.



## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

THE RECENT EXHIBITION.—Successful as the later displays of the South London Entomological and Natural History Society have been, the Twelfth Annual Exhibition of this Society, which was held at the Bridge House Hotel on the 5th and 6th ultimo, was not second to any one of them, from whatever point of view we may regard it. The number of exhibitors were not, perhaps, quite so numerous as they sometimes have been on these occasions, but the table and all other available space was well filled with a choice assortment of natural-history objects, largely entomological. Of these last the Secretary's report, which will be found on p. 149, will give full particulars. The educational value of exhibitions of this kind can never, perhaps, be satisfactorily ascertained; but it is safe to assume that some, who are attracted by mere curiosity to the show, are so impressed by the beautiful objects they see around them that they, too, resolve to form a collection of some of Nature's gems. Another way in which these exhibitions are distinctly useful is, that they afford an opportunity to fellow-workers for making the personal acquaintance of each other; and this was freely taken advantage of at the last show.—ED.

THE PRESENT PRICE OF "COPPERS."—At Stevens', on the 16th of last month, seven specimens of *Polyommatus dispar* were sold, and realized the large amount of £15 18s. 6d., or, roughly speaking, an average of £2 5s. apiece. A fair male specimen was knocked down for £3 3s., and a nice female example fetched the handsome sum of £4 10s., whilst two other, not very fine, females went for £2 15s. and £2 2s. respectively. One male, minus both antennæ and abdomen, was sold for £1 8s.; a female, in poor condition, for £1; and a chipped male, reversed, for £1 10s. Altogether it would seem that anything in the way of a British "copper" is worth money. Among the other things offered in this sale were three pairs of *Lælia cænosa*, not all in the best possible condition; these realized £1 1s., £1 4s., and £1 12s. 6d. per pair. A fine pink, but small, example of *Noctua subrosea* went for £2 10s.; two others fetched £2 10s. the pair; but the next two lots only commanded 16s. per pair. A specimen of *Arctia caia*, with yellow abdomen and hind wings, found a purchaser at 8s. 6d.—ED.

HEREFORDSHIRE LEPIDOPTERA.—Mr. Thomas Hutchinson has published a list of the Herefordshire Lepidoptera in the Leominster and Tarrington districts:—510 Macro-Lepidoptera and 669 Micro-Lepidoptera are enumerated, making the respectable total of 1179 species.—ED.

"BUG-HUNTING."—In a pamphlet of 16 pp., bearing this title, Mr. Hewett, the author, gives most excellent advice to the young collector; and many, who consider themselves experienced in all that pertains to the catching and setting of Lepidoptera, will find therein some hints which it would probably be to their advantage to adopt, especially as regards the setting business.—ED.

EGGS OF ANTHOCHARIS CARDAMINES.—The ovum has the same form as all those composing the genus. It is shiny; in colour, opal, with a slight yellowish tint, afterwards changing, if fertile, to orange-red, and, before the exit of the young larva, to dull lead-colour, transparent at the tip. These eggs are laid singly in an upright position, and are attached by the base, which is flat, to the peduncle (or flower-stalk) of the plant. They

are sometimes deposited in the very centre of the racemes, in which position they require careful hunting for. Occasionally several occur on one plant, but never in the same position. On April 22nd, this year, I watched a female, near here, ovipositing on the flower-heads of *Turritis glabra* (tower-cress). Afterwards, examining a plant which I had just observed her to visit, I found an egg, and subsequently, on several occasions, others. The caterpillar emerged nine days afterwards.—F. BROMILOW; Nice, France, May 2, 1892.

*DRURYIA ANTIMACHUS*, FEMALE.—A specimen of this, so far as I can learn, unique insect, has just come to hand from the Gaboon, West Africa. It is a very small insect, and differs from the male by the fore wings being rounded on the outer margin instead of concave; they are also much less clothed with scales, and approach a semi-diaphanous condition. It was accompanied by an unusually fine large dark male, caught in the same locality, and both specimens are in good order. The anal segment of *antimachus* is exactly the same sexually as in the genus *Ornithoptera*, the males having a horny clasped terminal, whilst in the female it is simple and thickly pubescent. Both the specimens have been added to the fine collection of Mr. Herbert J. Adams, of Enfield, whose new museum, being now completed, the collections can be seen by appointment.—WILLIAM WATKINS; The Hollies, Croydon, May 5, 1892.

*APORIA CRATEGI* IN ENGLAND.—In the 'Entomologist's Record,' for April last, Mr. Tutt is somewhat severe on Mr. Hodgkinson for not being aware that the last record of this species was that of the specimens taken in 1887, and vouched for by Mr. S. Webb. As a matter of fact, this is *not* the last record, as the species was taken by my nephew in 1888, and recorded in the 'Entomologist' (xxi. 184), as well as in the 'Young Naturalist.' I wrote to the 'Record,' pointing out the error; but Mr. Tutt has not thought proper to insert the correction.—C. A. BRIGGS; 55, Lincoln's Inn Fields, May 18, 1892.

A HINT TO BREEDERS OF LEPIDOPTERA.—In the 'Societas Entomologica,' of the 15th April, an ingenious but simple method is described of keeping cuttings of hollow-stemmed plants fresh for at least eight to ten days, and a translation may be useful to breeders of Lepidoptera:—"Take a tin pipe of 2 centimètres diameter, give it the shape of a quicksilver barometer, making the shorter arm about 12 and the longer arm about 75 centim. in length: the short arm is plugged by cork, pushed tightly in until it is even with the rim, perforate it with a hot needle, into which the sprig of the plant fits tightly. After insertion of the sprig cover the surface of the cork with wax, with which powdered kolophonium has been mixed to ensure quick drying. Now fill the long arm with water, and it follows, if the shorter arm has been efficiently closed, that the water, by the pressure in the longer tube, must rise inside the hollow stem of the sprig; and, after a couple of hours, the sprig will hold up its head as if it had never been separated from the parent plant. Then fix the tube by wire to a stick in a perpendicular position, stick this into the earth, and the arrangement is complete."—N. F. DOBRÉE; Beverley, E. Yorks, May 6, 1892.

*PSEUDOPSIS SULCATA*, Newm.—I have the pleasure of recording the capture of two specimens of this rare beetle, in February last, among refuse from a haystack standing near Birkenhead. The species has not been previously recorded from the Liverpool district; and, unfortunately,



the stack from which the refuse was obtained had been removed before the specimens were diagnosed.—JOHN W. ELLIS; 18, Rodney Street, Liverpool, April 26, 1892.

SPRING CAPTURES AT LEICESTER.—The following are a few notes on gas-lamp entomology and collecting at the shallows, this spring, at Stoneysgate and Knighton. Gas-lamps:—*Selenia illunaria*, *Hybernia rupicaprararia*, *H. progemmaria*, *Anisopteryx æscularia*, *Anticlea badiata*, *Cidaria silaceata*, *Tænioampa instabilis*, *T. stabilis*, *T. gothica*, *T. cruda*, *T. munda*, *Xylocampa lithorhiza*, and *Diurnea fagella*. Sallow (in addition to the above):—*Tænioampa rubricosa*, *T. gracilis*, and *Calocampa vetusta*. In all seventeen species. The weather has been so bitterly cold that it has on several occasions stopped collecting at least for a week at a time.—C. B. HEADLEY; Stoneysgate, Leicester, May 1, 1892.

CAPTURES IN WESTMORELAND, 1891.—The following notes of my captures in Westmoreland, between July 11th and August 5th, last year, may be of interest. I hoped to take *Phothedes captiuncula*, and, thanks to notes recorded in the 'Entomologist,' was successful. It was fairly abundant from the 13th to the 17th; then it almost disappeared, owing to the heavy rain, the last being taken on the 27th. *Thera simulata* disappeared in the same way, just as I was completing a fine series. My expedition for *Erebia epiphron*, on the 16th, was not pleasant, owing to ceaseless rain, the mountains being enveloped in clouds; after close hunting some twenty were obtained, but not in very good condition; probably it was too late in the season. The same remark applies to *Cænonympha typhon* and *Argynnis adippe*. *Erebia æthiops* appeared on the 29th and following days, all in superb condition. *Carsia puludata* was fine from the 20th, and can be taken in wet weather by searching. *Nemeophila russula* (two females on the wing), *N. plantaginis* (three females on the wing), *Hepialus velleda*, *Notodonta dictæa*, *N. dictæoides*, *L. camelina*, *Xylophasia sublustris*, *X. monoglypha* (black var.), *Mamestra abjecta*, *M. furva*, *Agrotis lucerneæ*, *Xanthia fulvago* (female), *Hyria muricata* (worn), *Larentia salicata*, *L. olivata*, *Eupithecia venosata*, *E. sobrinata*, *Coremia munitata*, were also taken amongst others. Light, during the first week in August, was very successful; it even attracted *Mixodia schulziana*, presumably from a "moss" quite a mile and a half away. Larvæ of *Dianthæcia capsicola*, *D. cucubali*, *D. carpophaga*, and *Eupithecia venosata*, were exceedingly abundant. *Notodonta ziczac*, *Asphalia flavicornis*, *Acronycta menyanthidis*, *Panolis piniperda*, *Hadena glauca* (rare), *Plusia chrysis*, *Anarta myrtilis*, not uncommon.—E. B. NEVINSON; 7, Staple Inn, W.C.

COLLECTING ON THE SCOTCH BORDERLAND.—My first collecting expedition was on April 21st, when I paid a visit to the Scotch borderland, to the spot where I took *Micropteryx sangii* last year. Although the weather was cold, I found that I had hit the right day. Being joined by Tom Duckworth, an able assistant and a good worker, we proceeded to business, he used the umbrella, and I manipulated my sweeping-net, and together we secured 150 specimens of various *Micropteryx*, including *sangii*, *caledoniella*, *unimaculella*, *purpurella*, and *semipurpurella*. We paid three more visits on succeeding days, with an extra stock of boxes, numbering at least 250. Tom Duckworth determined that we should not go back until all the boxes were full, a task which did not take long to accomplish. This great catch was effected on an area of not many yards in extent. Among other captures was a very fine *Gracillaria stramineella*, the Scotch

form; the last time I met with this form was in 1846, near Pitlochry. I also picked up a fine variety of *Saturnia pavonia*, with a black head, and near the shoulder a jet-black patch, about three-eighths of an inch in width. I brought home, unset, about 1000 species; when these are set, no doubt some of my Micro friends will participate in the spoil.—J. B. HODGKINSON; Ashton-on-Ribble, May 2, 1892.

PHIGALIA PILOSARIA.—I bred a fine black variety of this species from a larva taken in Delamere Forest last year.—H. McDOWALL; The Terrace, Nashville Park, Howth, near Dublin, May 16, 1892.

EARLY APPEARANCE OF PIERIS BRASSICÆ.—Yesterday, in the neighbourhood of Micklemham, my brother and I saw several specimens of *Pieris brassicæ* of both sexes. Is not this an unusually early date? *P. rapæ* was in abundance, and *G. rhamni* and *S. malvæ* were common.—T. H. BRIGGS; Surrey House, Leatherhead, April 25, 1892.

STAUROPUS FAGI.—Yesterday, the 15th May, I found a fine female of the above on a beech trunk near here, on the Berkshire side of the Thames. The earliest I have ever found it before was the 21st (Entom. xxi. 158).—W. E. BUTLER; Hayling House, Oxford Road, Reading, May 16, 1892.

NOTES FROM READING.—*Brepbos parthenias* has been common; and I have taken *Asphalia flavicornis* from birch. *Lobophora lobulata* has been common on tree trunks. *Xylocampa lithoriza*, *Xylina rhizolitha* (hybernated), *Tephrosia punctulata*, *Boarmia cinctaria*, *Notodonta camelina*, *Tephrosia crepuscularia*, *T. biundularia* (commonly), *Ephyra omicronaria*, *Demas coryli* (commonly), and *Lithosia aureola*, I have also taken from trunks. I searched birch for *Endromis versicolor*, but failed to get it; it has, however, been taken in the district. Where *Platypteryx unguicula* swarmed last year, I have only seen two. On the 12th inst. I went for *Stauropus fagi*, and brought home two males. Since then I have taken eleven,—eight males and three females. The former vary from the light to the very dark forms; the females are typical. With one exception, all were taken from the N. and N.E. sides of the tree; and eleven were from the smallest trees, i. e., those from 1½ to 4 inches in diameter; the other two were on middle-sized trees. I searched all trees, but from the big ones got none. This may be useful information to those within reach of beech and oak woods.—J. CLARKE; Reading, May 19, 1892.

ANOTHER IRISH LOCALITY FOR NYSSIA ZONARIA.—In the 'Irish Naturalist' for May, Mr. G. H. Carpenter, one of the editors, records the occurrence of a female *Nyssia zonaria* on the sand-hills of Achill Island, and observes that the only Irish locality previously known for this species was Ballycastle in Co. Antrim.—ED.

NOTES ON THE EARLY MOTHS.—From the 15th to the 27th of March the weather was warm and sunny. On the 19th I paid another visit to Delamere Forest to continue my observations on *Hybernia leucophaæaria*. The moth was out in hundreds, and, in addition to the three forms already described (see Entom. 122, 123), I took a specimen of a fourth, of which the following is a description:—All the wings black-brown and unicolorous, the lower wings being slightly paler than the upper; head, thorax, and antennæ, smoke-coloured; body black-brown. The broad transverse central



bar on the upper wing is obliterated, being filled up with black-brown instead of grey. The position of the bar is, however, marked by indistinct black boundary lines. The exterior margins are bounded, as in the other three forms, by a thin black line of minute crescents, beyond which is the slightly paler fringe. The wing-rays are delicately pencilled in black. My other captures were a common humble-bee, which I set free again; *H. marginaria* (*progemmaria*), four males and two females; half a dozen *Anisopteryx æscularia*, males; three *Nyssia hispidaria*, males (this is now a scarce insect in the forest); three *Phigalia pedaria* (*pilosaria*), males; and a dozen or more of the fussy little *Tortricodes hyemana*. I also took a small brown Geometer larva (probably one of the *Eupithecia*) crawling up an oak. This caterpillar, together with the small brick-red one, mentioned in my forest notes for February 13th (Entom. 122), has since spun a few threads for a cocoon, and changed into a greenish brown chrysalis. My next visit was on the 26th, and, as the train sped on through the green fields, it was evident, from the catkins in blossom on favoured willows and the water-grass stretched upon the surface of the ponds, that I must be prepared for a march of the season in the forest. My chief object was to secure a female *N. hispidaria*, and as the three dials in the morning 'Standard' showed a falling barometer all over England, no time was to be lost. I found the early moths had almost disappeared. Three male *A. æscularia*, about a dozen male *H. leucophæaria*, and one female, showed that the time had been reached between *Hybernina* and *Tæniocampa*. As the female *H. leucophæaria* is rare, I will venture to describe it. Head, thorax, and body silvery grey, with minute black spots. Thorax ornamented with a wide black  $\Lambda$ , the angle pointing towards the head. The 1st, 2nd, 3rd, and 4th segments of the body have each two dorsal and conspicuous black spots; these spots are rectangular, and largest on the 2nd and 3rd segments. Antennæ black; wings microscopic; legs black, long, and very spider-like. The sport was poor until about 3.30, when a moth, with rapid movement, suddenly started on the wing from an oak trunk. I had no net, but the resources of civilization were not yet exhausted. Seizing my hat I gave chase, and knocked the insect down. It turned out to be a fine female *Brephos parthenias*, the first recorded capture for the district. For years back I have undoubtedly seen this species in the forest on the wing. Shortly after this capture I came across Messrs. Mason Bros. from Manchester, with whom I had the pleasure of working for the remainder of the afternoon. On comparing our captures at the close of the day, I found they had each secured a specimen of *H. leucophæaria*, Form 4. Their other good things were *N. hispidaria* (three males), *Larentia multistrigaria*, and *Asphalia flavicornis*. I took a female *N. hispidaria*, which unfortunately declined to oblige me with eggs, and a couple of *A. flavicornis*, females; all by trunk-searching. Each of the latter afterwards laid eggs; those of the first were infertile. The egg of this moth is a beautiful object, even to the naked eye. Under the microscope it is an irregular ellipse, with an indistinct "apical zone" (this is a most descriptive phrase, and I borrow it from Dr. Chapman). From this zone proceed rough longitudinal furrows down the entire length of the shell; but the beauty of the egg lies in the different colours assumed within the first week, all being perfectly visible to the unaided eye: on the first day it is white; about the second, cream-coloured; third day, yellow; fourth, cherry-plum; fifth day, coral-red. I had a few of these eggs on a piece of white cotton-wool, together with some of *N. zonaria*, which are bright pea-green, and the picture was an exceedingly

pretty one. The eggs of *A. flavicornis* retain their coral tint, but gradually lose in brightness. Before nightfall—I am now referring to my last Delamere visit—a cold rain set in; and next day, March 27th, there was a general fall of snow from the N.E. April was ushered in by warm, summer-like weather. Mr. C. Leeson Prince, writing from the Observatory, Crowborough, to the 'Standard' for April 11th, says:—"We have had the highest recorded temperature since 1848 during the first April six days. In 1848 the average temperature for the six days was 69°; in 1892, 67°. The fine weather broke up on the 12th, with snow, as in 1848. Previous to the break up I took three larvæ of *Arctia caia*, April 3rd; and an imago of *Pieris rapæ* on April 10th. In my breeding-pots, the first *Tephrosia biundulata* var. *delameriensis* (first brood, bred from the moths of last summer) appeared, March 22nd; *Tanioampa instabilis* and *T. opima*, April 4th; *T. gothica*, April 8th. All of these were bred from the egg, but none of the species deserve special comment except *T. opima*, with which I have been exceptionally fortunate this year. Up to date, April 21st, twelve specimens have emerged. They exhibit, I believe, every variety of the moth, from the darkest to the lightest; the latter appeared to be the type; all were bred from the same batch of eggs, and under the same conditions. Some of the forms are very beautiful, and would puzzle many an experienced entomologist. *Agrotis ashworthii* larvæ have been scarce, but imagines of *N. zonaria* plentiful,—to entomologists who know where to go, and when. Three years ago I laid down scores of *zonaria* eggs in a likely spot near Chester, but all my efforts to establish the insect have been unsuccessful. *Diurnea fagella* is just now, exceptionally and generally, abundant, and "black" forms are frequent among the types.—J. ARKLE; Chester, April 21, 1892.

ERRATA.—Page 119, line 16 from top, for *Leucanium he misphæricum* read *Lecanium hemisphæricum*; page 126, line 4 from top, for *Saletaria* read *Salatura*, and for *Limnias* read *Limnas*.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—April 27th, 1892.—Mr. Robert McLachlan, F.R.S., Treasurer, in the chair. Mr. William Edward Baily, of Lynwood House, Paul Churchtown, Penzance; and Mons. Edmond Fleutiaux, of 1, Rue Malus, Paris, were elected Fellows of the Society. Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species:—viz., one of *Papilio machaon*, bred by Mr. S. Baily, at Wicken, in 1886; one of *Argynnis lathonia*, taken at Dover in September, 1883; one of *A. euphrosyne*, taken at Dover in 1890; and one of *A. selene*, taken at St. Osyth, in 1885, by Mr. W. H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett also exhibited, for Mr. Sydney Webb, a number of varieties of *Arge galathea*, *Lasionmata megæra*, *Hipparchia tithonus*, and *Cœnonympha pamphilus*, from the neighbourhood of Dover. The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemmaria*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale. The



Rev. Canon Fowler made some remarks on the subject of protective resemblance; he said his attention had been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and that Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant said that a species of butterfly in South Africa, which when its wings were vertically closed resembled the reddish soil on which it settled, in the Transvaal rested with open wings on quartzite rock, which the upper surface of the wings protectively resembled. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Mr. H. Goss, Canon Fowler, and Mr. Frohawk, continued the discussion. Mr. Goss informed the meeting that, in pursuance of a resolution of the Council passed in March last, he and Mr. Elwes had represented the Society at the recent Government enquiry, as to the safety and suitability of the proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd, and 23rd inst., and that they had given evidence at such enquiry, and addressed a large meeting of counsel, solicitors, War-Office officials, Verderers, and Commoners.

May 11th.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. Dr. Edward A. Heath, M.D., F.L.S., of 114, Ebury Street, Pimlico, S.W.; and Mr. Samuel Hoyle, of Audley House, Sale, Cheshire, were elected Fellows of the Society. The President announced the death, on the 4th of May, of Dr. Carl August Dohrn, of Stettin, one of the ten Honorary Fellows of the Society. Mr. Stainton expressed regret at the death of Dr. Dohrn, whom he had known for a great number of years, and commented upon his work and personal qualities. Dr. D. Sharp exhibited drawings of the eggs of a species of Hemiptera, in illustration of a paper read by him before the Society; and also a specimen of a mosquito, *Megarhina hamorrhoidalis*, from the Amazon district, with the body, legs and palpi furnished with scales as in Micro-Lepidoptera. The Rev. Canon Fowler, on behalf of Mrs. Venables, of Lincoln, exhibited cocoons of a species of *Bombyx* from Chota Nagpur; also the larvæ-cases of a species of Psychidæ, *Cholia crameri*, from Poona; and a curious case, apparently of another species of Psychidæ, from the island of Likoma, Lake Nyassa. Mr. McLachlan, Mr. Poulton, and Mr. Hampson made some remarks on the subject. Mr. F. W. Frohawk, on behalf of the Hon. Walter Rothschild, exhibited a specimen of *Pseudacraa miraculosa* mimicking *Danaïs chrysippus*; also a specimen of the mimic of the latter, *Diadema misippus*, and read notes on the subject. Mr. C. G. Barrett exhibited, and commented on, a long series of specimens of *Melitæa aurinia (artemis)* from Hampshire, Pembrokeshire, Cumberland, and other parts of the United Kingdom; also a long and varied series of *Coremia fluctuata*. Mr. H. Goss exhibited, for Mr. W. Borrer, jun., of Hurstpierpoint, a portion of a wasp's nest which had been built with the object of concealing the entrance thereto and protecting the whole nest from observation. He also read notes on the subject, which had been communicated to him by Mr. Borrer. The Hon. Walter Rothschild communicated a paper entitled "Notes on a collection of Lepidoptera made by Mr. Wm. Doherty in Southern Celebes during August and September, 1891, Pt. I. Rhopalocera." He also sent for examination the types of the new species described therein. Dr. Sharp read a paper entitled "On the eggs of an Hemipterous Insect of the family *Reduviidæ*."—H. GOSS & W. W. FOWLER, *Hon. Secs.*

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*April 14th, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. South exhibited several aberrant specimens of *Arctia caia*, L., and read notes on the variation of this species; and also exhibited examples of the species artificially darkened by being killed with nicotine just after the expansion of the wings and before they had dried. Mr. C. G. Barrett exhibited a long series of *Noctua festiva*, Hb., from all parts of the British Isles, including the Isle of Shetland, and stated that Mr. Hart, of Dublin, had taken what appeared to be a partial second brood, and some of these were comparable to the so-called *Noctua conflua*. Mr. Barrett expressed the opinion that the series shown were all one species. Mr. Adkin also exhibited a series of *N. festiva* from Forres, Rannock, and Shetland. Mr. Tugwell, southern forms of *N. festiva*, specimens from Aberdeen, and one from Kincardineshire, similar to the Shetland form. In the discussion which ensued, Mr. Tugwell remarked that the late Mr. Doubleday was of opinion that *Noctua festiva* and *N. conflua* were identical. Mr. Lewcock said that, from an examination of Mr. Tutt's long series of *festiva* and *conflua*, he could observe no satisfactory specific distinction. Mr. Fenn questioned the appearance of a second brood in so short a time; in the examples he had from Shetland some had narrow and others broad wings; he expressed an opinion that the narrowness of the wing arose from the hardness of the conditions of life to which the species was exposed in the Shetlands, and was a kind of immaturity. Mr. South said that Mr. Tutt based his distinction of *Noctua festiva* from *N. conflua* mainly on the shape of the wing, whereas Treitschke, in his description of the last-named species, did not refer to the shape; the original type came from the Riesengebirge Mountains in Silesia. Since then specimens had been obtained from Iceland, and referred to the *conflua* of Treitschke; the Shetland specimens were not in any way referable to this form, but were the var. *thulei* [*thules*]; the narrow wings, in his opinion, were certainly not due to immaturity. He added that the moorland form of *festiva* was not peculiar to the north, as he had taken it in Devonshire. Mr. Barrett exhibited a specimen of *Notodonta bicolor*, Hb., which was taken in Devonshire in 1880, and until recently had been in a local collection under the name of *Notodonta cucullina*. He also exhibited, on behalf of Mr. Sydney Webb, of Dover, varieties of *Rhopalocera*. Mr. Adkin exhibited *Phibalapteryx lapidata*, Hb., and *P. vittata*, Bork., and read notes relative thereto. Mr. Lewcock, vars. of *Silpha atrata* from English, Scotch, and Irish localities; var. *subrotundaria* from Orkney and Ireland; also *Mesites tardii*, Curt., male and female, to show that in the male the antennæ are inserted nearer the apex of the rostrum than in the female, and that the male has a much stouter rostrum. It was also noted that this species was now taken in quantity under the bark of old holly trees.

*April 28th.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. V. Blachford, M.B., F.R.C.S., was elected a member. Mr. A. Cant exhibited a case of the genital organs of the Hesperiidæ, mounted in such a manner that they could be kept with the series in the cabinet. Mr. Frohawk, varieties of the under side of *Pieris rapæ*, L., from Cambridge, a variety of *Argynnis euphrosyne*, L., and a black example of *Apatura iris*, L., without any spots on the inferior wings. Mr. C. G. Barrett, on behalf of Major Still, a series of *Demas coryli*, L., reared this spring, and showing the variation the species was subject to in Devonshire; Mr. Barrett pointed out that in some cases the central markings were eliminated. On behalf of



Mr. Sabine, Mr. Barrett also exhibited a variety of *Papilio machaon*, L., with the dark bands narrow, and marginal primrose spots broad and upright; a specimen of *Argynnis latona*, L., with large black spots, and the wings suffused with a peculiar bronze colour; *Argynnis euphrosyne*, L., having the black spots massed together into large sharp deep black bands, and the fulvous colour in bright intermediate bands; also a much suffused specimen of *Argynnis selene*, Schiff., with the black spots massed in broad ill-defined bands. Mr. Barrett also, on behalf of Mr. Sydney Webb, exhibited varieties of *Melanargia galatea*, L., varying from dark to very pale forms. Mr. Billups exhibited *Pimpla graminella*, Schr., remarking that the cocoons were obtained from a larva of *Odonestis potatoaria*, L., and given to him by Mr. Fenn in January, 1891; four specimens were bred in 1891, and nineteen had emerged during the present month. Mr. E. Step exhibited a large collection of lichens, and contributed notes and observations thereon.

*Annual Exhibition.*—The twelfth Annual Exhibition was held on the 5th and 6th of May, at "The Bridge House," London Bridge, S.E. —Mr. C. G. Barrett, F.E.S., President, supported by Mr. J. Jenner Weir, F.L.S., Vice-President, formally opened the Exhibition, which comprised examples of all branches of Biological Science. During each evening Mr. F. Enoch, F.L.S., &c., gave the "Life-history of the 'Trap-door Spider,'" illustrated by his original micro-photographs; and there were also lectures on other subjects by Mr. E. Step and Mr. G. Day, F.R.M.S. Among the more important of the Entomological exhibits were those of Mr. J. H. Leech, who showed a number of drawers containing Palearctic Lepidoptera, comprising extensive series of *Smerinthus ocellatus* and *S. populi*, together with the Algerian *austauti* and its var. *staudingeri*, and the Russian *tremula*; *S. tiliæ* in great variety, with *christophi*, Staud., and *tatarinovii*, Brem.; many beautiful forms of *Bombyx quercus*; a selection of Japanese Noctuae, including remarkable forms of many species of the genus *Taenio-campa*. Mr. S. Edwards, a large selection of Exotic Rhopalocera. Mr. J. Jenner Weir also showed Exotic species, arranged to show mimicry. Mr. Crockett, life-histories of many silk-producing species of Bombyces. British Lepidoptera was represented by over forty exhibitors, including Mr. C. J. Barrett, with varieties of *Pieris napi*, *Anthocharis cardamines*, and *Lycæna icarus*; extensive series of varieties of *Agrotis cursoria* and *A. tritici*, from the east coast of England to west of Ireland; also extreme varieties of *Odonestis potatoaria*, the colour of the males ranging from chocolate to pale buff. Mr. Barrett also exhibited a drawer of varieties of Rhopalocera, which included Mr. E. Sabine's varieties of *Argynnis latona*, *A. euphrosyne*, and *A. selene*. The Rev. Joseph Green, a specimen of *Epinephele ianira*, with all the wings longitudinally and regularly striped between the nervures with a satiny whitish drab-colour, Dr. Wheeler, a striped and banded example of *Argynnis aglaia*. Mr. J. E. Robson, a striking form of *Colias hyale*. Mr. S. Webb, fine forms of *Melanargia galatea*, gynandrous and partially gynandrous specimens of *Lycæna ægon*, whitish blue and smoky blue examples of *L. corydon*. Dr. Mason, almost entirely black specimens of *Argynnis aglaia* and *A. euphrosyne*. Mr. C. S. Gregson, varieties of *Dianthæcia nana* (*conspersa*), from many localities; also a magnificent series of *Abrazas grossulariata*, many being extremely pale, and others having the whole or the greater part of the wings suffused with the black colour. Mr. Tugwell also had some very fine varieties of *A. grossulariata*; also extreme forms of *Tephrosia crepuscularia* and *T.*

*biundularia*, and fine series of many rare species, including *Boletobia fuliginaria*. Mr. J. A. Clark, splendid series of *Spilosoma lubricipeda*, *S. menthastri*, and *Lælia cænosa*. Varieties of *Arctia caia* were exhibited by Messrs. T. W. Hall, A. Short, A. W. Mera, and Goldthwait. Mr. J. Henderson showed a drawer of forms of *Tephrosia crepuscularia*. Mr. Machin, long series of the genus *Acidalia*; also of *Asteroscopus nubeculosa*, *Dicranura bicuspis*, and *Drepana harpagula (sicula)*. Mr. Tutt, long and variable series of *Tæniocampa gothica*, and other species of Noctuæ. Mr. Farren, a series of yellow examples of *Bryophila perla*, and a series of *B. impar*, Warren, taken at Cambridge, and arranged side by side with a long series of *B. muralis (glandifera)*; also interesting series of Geometræ from Cambridge. Mr. C. H. Williams, a gynandrous specimen of *Argynnis paphia*, taken by him in the New Forest in 1891. Mr. R. Adkin, British Sphinges and Bombyces, arranged to show local variation; also types of a collection of Macro-Lepidoptera, made at Rannoch in 1891, illustrating an article on the local variation recently contributed by Mr. Adkin to 'The Entomologist.' Mr. Wellman, his collection of the genus *Dianthæcia*, a long series of *Notodonta carmelita*, and *Cidaria truncata (russata)*, taken at and bred from ova obtained from numerous localities. Mr. Adye, some of the rarer Sphinges. Mr. R. S. Standen, fine varieties of species of the genus *Argynnis*. Mr. Jäger, *Callimorpha hera* and var. *lutescens*, also the larvæ of the species. Mr. South, nearly the whole of his collection of British Pyrales, Crambi, Pterophori, and Tortrices; a selection of British Noctuæ, among which were extensive series of most of the polymorphic species in this group; a drawer of *Lycæna icarus*, showing the colour-range of both sexes (one very blue female without the black discoidal spots was especially interesting); a drawer of Geometræ, showing that the colour and ornamentation of the female parent is transmitted to a large proportion of her offspring. The cases of *Selenia illustraria*, *S. illunaria*, &c., recently exhibited by Mr. Merrifield at a meeting of the Society, were on view, and were rendered more attractive by an additional case showing the effects of temperature applied for a very few days to pupæ at a sensitive stage, *i.e.* just before they began to show colouring. Mr. Hawes, Rhopalocera bred and captured during 1890 and 1891: these included some very fine and beautiful forms. Life-histories of many species, mounted on the natural food-plants, were shown by Mr. Simes, Mr. Quail, and Mr. A. J. Croker; and preserved larvæ were exhibited by Mr. Raine. In other orders Mr. R. McLachlan exhibited four drawers of European Neuroptera. Coleoptera were shown by Mr. W. West, Mr. G. Lewcock (fine series of the genus *Donacia*), and Mr. T. R. Billups; the last-named gentleman also exhibiting British Hemiptera-Heteroptera and Homoptera, each specimen being labelled with the locality and date of capture; rare species of Hymenoptera-Aculeata; long series of Ichneumonidæ, many being unique and others new to Science; also two drawers showing the life-histories of many species of internal parasites, showing the imagines and larval stage of the Lepidopterous host from which bred; the addition of the cocoon of the parasite did much to complete an exhibit which was certainly one of the most instructive in the room. Mr. Auld showed a nest of the Hornet; and Mr. H. Moore, Exotic Orthoptera, and Wasps' nests from Nova Scotia, Demerara, Bermuda, and Nassau. Mr. C. H. Goodman had two cases illustrating the comparative anatomy of the different orders of insects. The microscopical exhibits were as interesting as on former occasions, some thirty microscopes being available.



During the two days the Exhibition was open it was visited by upwards of 1100 visitors.—H. W. BARKER & A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*May 9th, 1892.* Mr. G. H. Kenrick, F.E.S., Vice-President, in the chair. Mr. Robert Allday, Handsworth, was elected a member. Mr. P. W. Abbott showed *Melitæa athalia* from Abbots Wood and the South of France; *Oporina croceago*, taken on sallow blossoms at Wyre Forest; and other Lepidoptera. Mr. Kenrick remarked that the English *athalia* were finer than the French. Mr. G. W. Wynn showed a number of moths taken on the shallows at Marston Green, including *Tæniocampa populeti*, *T. gracilis*, &c. Mr. R. C. Bradley read a paper on the Tipulidæ, showing six boxes of specimens in illustration; he said that there were 170 British species, out of which he had taken 112, also one new to Britain, two formerly considered as doubtfully British, and one or two perhaps new to science.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*May 9th, 1892.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Samuel Hoyle, of Sale, was elected a member. The Rev. H. H. Higgins, M.A., read a paper, entitled "Butterfly life before leaving the egg," in which, after describing the formation of the egg, he traced the gradual growth of the nucleus through the various stages until the tiny caterpillar was complete in all its parts and ready to leave the egg. The paper was illustrated by various eggs of Lepidoptera shown under microscopes. Mr. Higgins also showed some Brazilian Lepidoptera, and pointed out a strong case of mimicry. The President exhibited the rare *Crambus myellus* from Perth. Mr. Stott, on behalf of Mr. Rigby, Natural History Museum, Nottingham, a case of educational entomology, containing the life-history of *Eriogaster lanestris*. Mr. Jones, recently-bred Lepidoptera, and a fine variety of *Asphalia flavicornis*.—F. N. PIERCE, *Hon. Sec.*

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The Fifteenth Bi-annual Meeting of the above Society was held on Wednesday, May 11th, at the Royal Assembly Rooms, New Road, Woolwich, Mr. J. Woodward in the chair. The minutes of the previous meeting being read and confirmed, Mr. Dennis was elected a member. Owing to the pressure of business the exhibits were not numerous, Mr. Allbuury showing specimens of Geometræ and Micro-Lepidoptera; Mr. W. Broughton, *E. cardamines*, &c.; Mr. Povey, Micro-Lepidoptera; Mr. Woodward, larvæ and ova of *G. papilionaria*; Mr. Poore, conchological specimens. The officers for the ensuing six months were elected as follows:—President, Mr. J. Woodward; Vice-President, Mr. C. H. J. Baldock; Treasurer, Mr. A. S. Poore; Secretary and Librarian, Mr. H. J. Webb; Assistant ditto, Mr. T. Moore; Committee, Messrs. Allbuury, E. Knight, Sargent, W. Broughton, Povey, and Wilson; Trustees, Messrs. Webb and Sargent; Auditors, Messrs. Allbuury and H. Broughton. The question of reducing the subscriptions was then opened, and, after full discussion, the proposition of the Secretary was adopted, *viz.*, that ordinary members pay 1s. 3d. per quarter, and corresponding members (outside a ten-mile radius) pay, in advance, 2s. 6d. per annum. A vote of thanks to Mr. Baldock, for donation, concluded the meeting.—H. J. WEBB, *Secretary.*

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## DEIOPEIA PULCHELLA IN ENGLAND.

By RICHARD SOUTH.

I AM not able to ascertain the exact date of the earliest-known British specimen of *Deiopeia pulchella*, which I believe was taken in Yorkshire, but the example, generally considered to be the second-known "Britisher," is that figured in Samouelle's 'Entom. Calendar' (1819), which was captured by the late Mr. J. C. Dale in a field near Christchurch, Hants, on the 1st of October, 1818. Between the date last mentioned and the year 1827 two other specimens were captured in September and October, respectively, by Mr. Brown, at Hove, near Brighton. One of these found its way into the cabinet of the late Mr. J. F. Stephens, and was figured by Curtis on plate 169 of his 'British Entomology.' The date on this plate is 1827.

In the Westwood edition of Wood's 'Index' the species is figured (pl. 8, fig. 95), but no additional localities are given. Stainton, in his 'Manual,' vol. i. p. 150 (1857), gives Epping, Manchester, Stowmarket, and Worthing, and remarks that it is a very rare species, and has the reputation of being partial to stubble-fields. Newman, 'British Moths,' p. 31 (1869), writes:—"Mr. Doubleday has a single specimen taken at Epping, and we believe there are two or three other British specimens in different cabinets."

In 1869 the capture of three other British *D. pulchella* is recorded. One of these was taken at Folkestone, a second at Reading, and the third in Monmouthshire, all in the autumn. Two specimens were added to the still small and select band in 1870, *i. e.*, one at Scarborough in June, and one at Littlehampton; in the latter instance the month is not mentioned.

The greatest capture of *D. pulchella* on British soil was made in 1871, when no less than thirty of these pretty moths were made examples of. These were all caught on the east, south, and south-west coasts, and the Isle of Wight, and established a



record that has not been beaten up to date. After a rest of two years the species suddenly appeared in May, 1874, in Cornwall, and in June in Sussex, two specimens being noted as taken in each county. In the autumn of that year three examples were captured on the south and south-west coasts, and one individual in Derbyshire. The next year twenty-four were recorded, the larger number from places on the south, south-east, and south-west coasts, between September 16th and 20th; but one was obtained on the south-west coast on October 2nd, and one in a clover-field at Waltham Cross on September the 19th, at about the same time that the largest number were being taken on the coast. The number of specimens for 1876 is only one below that of the preceding year, and, with the exception of one example, which was taken at Neath, were all captured on the east, south, and south-west coasts, and the Isle of Wight. So far as I can find there is no notice of *D. pulchella* in England in 1877, and only three specimens are recorded for 1878; two of these were taken in May on the south-west coast, and one in the Isle of Wight some time during August. In 1879 a specimen was found between the deck planks of Southsea pier, and one at Gosport, but the time of year is not mentioned in either instance. The total for 1880 exceeds that of the two previous years, together, by one example; all the specimens were taken on the east and south-east coasts, and the Isle of Wight. One specimen was taken at Bournemouth in July, 1881; and one in Cornwall in September, 1884. In 1885 a specimen was captured on the Suffolk coast in May; and one at Folkestone in September. In the last-named place a specimen was taken in August, 1886; and two at Ramsgate in October of the same year. During the years 1887—1891, inclusive, *D. pulchella*, if really in the country at all during that period, seems to have been overlooked, or at least unrecorded. Already this year (1892) we have received intelligence of six specimens having been taken on our coasts, one example in a northern suburb of London, and one in N. Staffordshire; the largest number ever recorded so early in the year.

The following table will show the erratic manner in which *D. pulchella* has appeared and disappeared in this country during the last quarter of a century.

Table showing the occurrence of *DEIOPEIA PULCHELLA* in Britain during the last twenty-four years.

Year	Specimens	Year	Specimens	Year	Specimens
1869 .....	3	1877 .....	nil	1885 .....	2
1870 .....	2	1878 .....	3	1886 .....	3
1871 .....	30	1879 .....	2	1887 .....	nil
1872 .....	nil	1880 .....	6	1888 .....	„
1873 .....	„	1881 .....	1	1889 .....	„
1874 .....	18	1882 .....	nil	1890 .....	„
1875 .....	24	1883 .....	„	1891 .....	„
1876 .....	23	1884 .....	1	1892 June ..	8

On a former occasion I stated that *D. pulchella* was probably not permanently established in this country, and I may add that I still entertain this view. There is little doubt that—like *Colias edusa*, *D. livornica*, *Plusia gamma*, and certain other species which it is unnecessary to mention—*D. pulchella* is a migrant. The proper European home of the species is south of the Alps, and especially along the shores of the Mediterranean;\* it is common in Asia and Africa, and its range of distribution extends to Australia. In America it is replaced by *D. bella*.

With regard to the specimens of *D. pulchella* taken in England this year, it seems exceedingly probable that they are immigrants; not, however, simply specimens that have been blown over from the French coast, for, as a matter of fact, the species is as uncertain in its appearance in other parts of Central Europe as it is in England. Should specimens of the species occur here in the autumn (if the summer is favourable they probably will do so in some numbers), they may, I think, very properly be considered as the descendants of a new stock. It would, therefore, be of considerable interest if, from the present time, everyone having the good fortune to capture a specimen or specimens would make a point of placing such capture on record. Of course *D. pulchella*, even as an immigrant, has a perfect right to a place in our collections. I am not aware of the larva of the species having been found in England, although I have no doubt that it has often been searched for, especially in places where the moth has occurred. Imagines were said to have been bred about 1856 from ova deposited by a female captured at Torquay, but no particulars are given (Entom. v. 243). Mr. Tugwell (Entom. xi. 186, 251) gives us a most interesting account of the metamorphoses of the species. From eggs received from Mentone in May, 1878, moths were bred in July; from these one hundred eggs resulted, but only about a third of that number produced larvæ, some of which pupated in August, and yielded moths in September. A female of this second brood, having duly paired, deposited a few eggs each night for a fortnight, but all were infertile. Mr. Tugwell supplied the young larvæ with a garden variety of *Myosotis* and also *Borage officinalis*, and he observed that the former was preferred. Afterwards the common forget-me-not, *Myosotis palustris*, was introduced, and seemed to be greatly enjoyed by the larvæ, as they ate both flowers and leaves.

*Myosotis* is the pabulum given by most of the authors that I have consulted, but some of them mention *Heliotropium europæum* and *Solanum tomentosum* (not British plants); Kirby adds *Plantago*; and viper's bugloss (*Echium vulgare*) has been mentioned as a food-plant.

\* Mr. J. J. Walker says the species is always common at Gibraltar, but "was so numerous in the middle of May, 1887, as to be a nuisance" (E. M. M. xxiv. 182).



## THE LEPIDOPTERA OF EAST SUSSEX IN EARLY JUNE.

BY W. H. TUGWELL.

ON the 2nd of June, Mr. G. T. Porritt and myself started for a ten days' collecting trip in the Abbott's Wood district, East Sussex. Hailsham was selected for head-quarters, where we had secured suitable rooms. We arrived at our destination by a Victoria train at 5.6 p.m., and, after dining and unpacking, we set out, at 7.30, for the woods, to try the alluring power of sugar. The spot chosen for our operations was a ride in a wood, where, eighteen years before, I had obtained a specimen of the rare *Ophiodes lunaris*, and where, too, a few days afterwards, Mr. William Borrer had captured the still rarer *Catephia alchymista*. We hardly hoped to see these rarities again, but as we knew by previous experience that the locality was a rich one, we anticipated a good harvest of interesting species. After applying our sugar we plied the net on the numerous Geometridæ that were on the wing, and secured several fairly good ones. Our fellow moth-catcher, the goatsucker, was evidently busy, so we lighted our lamps, and from the first tree it was clear we were in for a good night of it; moths simply swarmed on every tree, not by twos and threes, but by the score and even hundreds. In the early twilight the most numerous species was *Tephrosia extersaria*; twenty to thirty on a tree was the general thing. Perhaps the next most common feaster was *Erastria fuscula*; a little later *Grammesia trilinea* were in profusion, interspersed pretty freely with *Cymatophora* or; *Aplecta nebulosa* and *A. herbida*, both evidently just out, and in splendid form and condition. *Diphthera orion* from time to time turned up, as did *Acronycta ligustri*, *Cymatophora fluctuosa*, *Thyatira batis*, and *Heliothis marginata*; whilst Mr. Porritt netted *Chærocampa elpenor* as it buzzed at his sugar. *Apamea unanimitis*, *A. basilinea*, *A. gemina*, and *A. oculea* were all more or less abundant, some pretty forms amongst them; *Xylophasia rurea*, and some very rich examples of the form *combusta*, too, *X. hepatica*, and several *Agrotis*. From this truly vast assemblage of moths, selecting a good form here and a well-marked specimen there, with uncommon things fairly thick, we soon came to an end of our pretty large supply of boxes, and we were forced to leave heaps of interesting insects still feasting on our spread banquet of sweets. We left the wood, walking home on the best of terms with ourselves, with some hours' work of setting on hand. We continued to sugar this round each night of our stay (Sunday excepted), and every night moths were in the greatest profusion. It was most interesting to watch from night to night the waning of one species and the increase in numbers of others; each day we added some new insects to our list. The most striking phenomena of our eight nights' sugaring was that

all our old notions of propitious weather or atmospheric influence were completely upset, as during our stay, with one night excepted, we had a bright moonlight and cloudless sky, up to a perfectly full moon, shining brilliantly on to our sugar patches. No matter which way the wind blew—north, east, and west—or if none at all, moths abounded just the same; there they were fighting for places, and we could only come to the conclusion that, as Lord Dundreary would say, “It was one of those things no fellow could understand.”

We were favoured with splendid weather; day after day we had bright hot sunshine, and in consequence the Diurni were in full force. I paid considerable attention to the butterflies, looking out for varieties, and was rewarded with three good aberrations of *Argynnis selene*; a fine form, with silver markings on the upper surface of the inferior wings, is exceptionally good, and unique, so far as my experience goes. The markings are three quadrate spots, identical in pattern on each wing. It was very readily detected, even on flight. I also obtained an extremely good var. of *Syrichthus alveolus*.

Aided by such grand weather, captures day after day utterly beat our powers of setting, and for myself, *nolens volens*, I had to bring home a number of unset specimens. Night after night we were forced to leave lots of species that ordinarily would have been duly boxed. *Aplecta herbida*, in magnificent condition, six and eight on a tree, were left feasting; we could have taken hundreds of it.

Of the Diurni, we captured or saw twenty-six species. *Pieris brassicæ*, *P. rapæ*, and *P. napi*; one good var. with bright canary-yellow under wing and tip of fore wing. *A. cardamines* was fairly common; *G. rhamni* (tattered) of both sexes. *Colias edusa* we saw most days, sometimes several; evidently it is to be an *edusa* year, like 1877. *Argynnis euphrosyne*, mostly wasted, and *A. selene* were plentiful and fine, although they rapidly got out of condition, and mostly wasted by end of our stay; a week earlier would have been better. *Melitæa artemis*, one male only, and I saw one other that had been secured in the well-known White-field; *M. athalia* were distributed all over the wooded district, nowhere abundant. *Vanessa atalanta*, a few, whilst *V. cardui* were everywhere; *Satyrus megæra* and *S. tithonus*; *Cænonympha pamphilus*, abundant; *Polyommatus phlæas*, a few only. *Lycæna agestis*, *L. alexis*, *L. adonis*, and *L. alsus*, all common; *L. argiolus* was reported, but we did not meet with it. Of the skippers, *Syrichthus alveolus*, *Nisoniades tages*, and *Hesperia sylvanus*, all in abundance.

Of the Nocturni, eighteen species were observed or captured. *Macroglossa fuciformis* was fairly common over *Ajuga reptans*; one *M. stellatarum* only seen at Eastbourne. *Ino (Procris) statice*s and a very small form of *Zygæna trifolii* were both fairly common



in a meadow in Abbott's Wood. *Nola confusalis*, a few only on tree-trunks, whilst the Lithosiidæ were sparingly represented by two *L. aureola* and one *L. mesomella*; in former years I have seen *L. aureola* in plenty on sugar. *Nemeophila* (*Chelonia*) *plantaginis* dashed about freely in the hot sunshine, and one *Arctia villica*, on the wing, looked almost too brilliant a species for our more sober coloured insect; it seemed like a flashing meteor, and gave one quite a start.

Of the Geometridæ, forty-four species were captured. Nothing particularly rare, the best perhaps being *Eurymene dolobraria* (at sugar, several), *Selenia lunaria* (beaten out), *Tephrosia consolaria* and *T. extersaria* (common at sugar), *Boarmia consortaria* (by no means rare), all the *Ephyra* except *orbicularia*, *Eupisteria heparata*, *Emmelesia affinitata*, and *Lobophora sexalata* (all sparingly), *Melanippe hastata* (a few each day). Of the genus *Acidalia*, *A. subsericeata*, *A. promutata*, and *A. inornata* were the best; *Tanagra chærophyllata* was in plenty over the common earth nut (*Bunium flexuosum*).

Noctuæ, fifty-seven species were captured, amongst them *Thyatira batis* and *T. derasa*, *Cymatophora fluctuosa*, *C. or*, *Diphthera orion*, *Acronycta psi*, *A. leporina*, *A. aceris*, *A. megacephala*, and *A. ligustri*; curiously of *A. auricoma* we did not see a single specimen; generally common here. Leucaniidæ (two species), *L. pallens* and *L. comma*; *Xylophasia rurea*, in great force and variety; grand forms of var. *combusta*, *X. lithoxylea*, and *X. hepatica*; *Mamestra anceps*, *M. brassicæ*, and *M. persicaria*; *Apamea basilinea*, good vars. also of *A. gemina*; *A. unanimitis* and *A. oculea*. All these species were just coming out in force. *Miana strigilis* in swarms, with a few *M. fasciuncula*. The commonest *Noctua* was undoubtedly *Grammesia trilinea*; in great variety, some extremely good forms; *Rusina tenebrosa*.

The Agrotidæ were represented by *A. suffusa*, *A. segetum*, and *A. exclamationis*; and the Triphænæ by *pronuba* only. *Noctua plecta*, *N. c-nigrum*, *N. brunnea*, *N. festiva* (just coming out), and *N. rubi* were all common. *Tæniocampa gothica*, a late specimen; *Tethea retusa*, larvæ more rare than usual here; *Phlogophora meticulosa*, common; *Euplexia lucipara*, grand forms, purple tone; *Aplecta herbida*, in profusion; *A. nebulosa*, ditto; *A. tincta*, a few only; *Hadena dentina*, very variable; *H. oleracea*, *H. pisi*, *H. thalassina*, and a few *H. genistæ*; *Heliothis marginata*, at sugar; *Heliodes arbuti*, flying in sunshine; *Erastria fuscula*, in plenty at sugar; *Habrostola triplasia*; *Plusia gamma*, in swarms everywhere; *Gonoptera libatrix*, hibernated specimens; *Euclidia mi* and *E. glyphica*; and the little *Phytometra ænea*. Most of the above occurred in large numbers, principally at sugar.

In sugaring my friend Mr. Porritt was more lavish with his sweets than myself, and his patches were both larger and thicker;

as a consequence he had many more insects on his trees than I did. It was by no means unusual to see on some of these larger patches over 200 moths feasting at one time. Still, although my patches of bait were smaller, and consequently fewer moths on each tree, my captures of the better species were about equal to his, save in one species, viz., *Xylophasia hepatica*. Of this insect Mr. Porritt took possibly two dozen, whilst I only secured some three or four specimens. It almost appeared as if the vast mob of moths frightened away some of the more timid and flighty species. During our eight nights' sugaring we must have seen over 20,000 moths. I never in all my experience saw anything to equal the numbers; it was indeed a sight to recollect.

Amongst the Deltoids only four species were observed, and of the Pyralidæ thirteen species were obtained, the best thing being *Agrotera nemoralis*, now rare; only a single specimen occurred, where in former years I have taken readily several dozen each day. *Botys lancealis*, too, was sparingly taken by beating, and one specimen came to sugar. *Ennychia octomaculalis* occurred freely. We saw a few only of the commoner Crambites, and the Tortrices seemed unusually scarce; the only common thing was *Roxana arcuana*, and that was in thousands.

Thus, during our ten-day stay at Hailsham, we captured or observed 160 species of Macro-Lepidoptera, that is, to end of Pyralidæ; and, considering time of year, this is truly a good number. Although we failed to turn up any specially rare insect, and missed a few we had anticipated, yet, as an outing, it was a great success and thoroughly enjoyable.

Greenwich, June 20th, 1892.

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## ON THE RECENT ABUNDANCE OF *PLUSIA GAMMA* AND *VANESSA CARDUI*.

BY ROBERT ADKIN, F.E.S.

DURING the past few weeks the neighbourhood of London has been visited by one of those remarkably sudden appearances of *Plusia gamma* that are from time to time observed. Up to 24th May I had not noticed a single example of the species, but on going into my garden at dusk on that evening, I found them literally swarming; they were arriving in numbers, whence no one could tell, dashing wildly about, or hovering over the wall-flowers for a moment, and disappearing in the twilight equally suddenly, but only to be replaced by others. Again, after dark, I spent some time in watching them by the light of a lantern, and found them coming and going just as before; the evening



was very warm, and many other species were also on the wing, but *P. gamma* many times outnumbered the whole of them put together. I captured and examined many of them; a few presented a battered appearance, but the majority had their thoracic crests and wing fringes intact, their pale colour alone suggesting that they were not recently emerged from pupa, or that their wings had done more than ordinary service; a great number of them were females, and deposited ova freely directly they were boxed, they no doubt being engaged in that operation when captured.

At a meeting of the South London Entomological Society, on the 26th May, members present mentioned that they had met with *P. gamma* in abundance at various places covering an area of some ten miles round London, but in no case had they observed it prior to the 24th.

On the nights of the 25th and 26th thunderstorms, accompanied by heavy rain, passed over, but the temperature remained high for the time of year; and *P. gamma* continued to visit my garden nightly, though in decreasing numbers, until June 10th, since which date I have been unable to discover but one individual, the disappearance coinciding with the sudden fall in temperature and wet weather of the 11th and 12th.

*P. gamma*, being so common, I concluded that it would not be necessary to go very far to find *Vanessa cardui* also, and in this I was not disappointed. My first trip towards the outskirts of London was to the neighbourhood of Edgware, on May 28th, and, on leaving the railway-station, the first insect that met my gaze was *V. cardui*, and during the afternoon many more were seen; and on June 6th I found it still more abundantly in the lanes in my own neighbourhood; indeed, I do not remember to have previously seen it so commonly in the district. I have also met with an occasional specimen of *Nomophila noctuella (hybridalis)*, an insect which appears frequently to accompany any general abundance of the other species under notice.

Nor is London the only district affected; and to friends resident in various other parts of the country I am indebted for many valuable notes, from which the following are taken:—From Polegate, Sussex, I learn that *P. gamma* and *V. cardui* are very common. "*P. gamma* swarmed in my garden; I could have taken twenty at one sweep of the net. They appear very light in colour this season." In the New Forest both species were noticed commonly about the middle of May; *P. gamma* was flying in some numbers at Stockbridge, Hants, on June 4th, and came freely to flowers of *Lychnis* at Northwood, Herts, early in June. At Brentwood, Essex, on 29th May, "*V. cardui* was swarming over a patch of bluebells; and *P. gamma* was in thousands." From Herefordshire I learn that, "although opportunities for observation have been limited, it has been impossible not to

note that *V. cardui* and *P. gamma* have been more than usually common; as a rule *V. cardui* is rather a rare insect in this neighbourhood (Herefordshire). We first noticed them about three weeks ago" (i. e., about 26th May). Going farther north, near Rotherham, Yorks., on "May 28th, June 2nd and 7th, *P. gamma* was unusually abundant; one field we passed for a near cut to the woods was alive with them. *V. cardui* is this year abundant also; we do not see it every season." The last named is also abundant on the cliffs at Scarborough, Yorks. From Perthshire I learn that, owing to the very unfavourable weather, *V. cardui* has not been seen at all, and *P. gamma* only very sparingly; but in Sutherlandshire "*P. gamma* occurred pretty freely at flowers of *Arctostaphylos uva-ursi*, and even on the top of Ben More and Canisp, over 3000 ft.; it struck me as rather curious then, since I have seen them more commonly here (Invershin), but certainly not in any way swarming; I saw about fifty at sugar one night, by far the commonest moth that particular night. I have not seen a single *V. cardui*, although I have been well over the country, forty or more miles, and well on the coast; so they have not reached here yet." And still farther north, in Shetland, we find *P. gamma* in unusual numbers. "I first saw *P. gamma* about the beginning of this month (June); I believe it was on the 3rd. In former years I have only taken it on the cliffs, but this year I have met with it from the water's edge to the tops of the highest hills (900 ft.), but not by any means common. Owing to the spell of bitterly cold north-east wind we have had they have been checked, if not killed; it is fully a week now (16th) since I saw one. I have seen no *V. cardui* up to date; if I remember rightly, the end of this month is the time for them here."

So far as I can learn, neither species was particularly common last autumn; undoubtedly some few *P. gamma* were to be found, but in my own experience their number was below the usual autumn average; and of *V. cardui*, I did not see a solitary one, nor did we find any abundance of either species during the warm weather of this spring, April 2nd to 10th, when the shade temperature touched 74°; or the warm days later in that month and the earlier part of May, when they would surely have been tempted from their winter quarters had they been hibernating. I have little doubt that the abundance of both species recently noted is due directly to the agency of migration; in other words, that the individuals comprising it are themselves immigrants, which may, under favourable conditions, be the forerunners of a still greater abundance in the autumn. The subject is, however, one of too deep an interest to be dismissed with a few hasty remarks, founded largely upon scattered fragments of evidence; and it is in the hope that entomologists, not only in this country, but in those other countries similarly affected to our own, may be



induced to record from time to time systematic observations upon the subject, that I have ventured to bring together some few facts and my conclusions touching the recent abnormal numbers of the species referred to in Britain.

Lewisham, June 20th, 1892.

## SYNONYMIC NOTES ON PHYTOPHAGOUS COLEOPTERA.

By MARTIN JACOBY, F.E.S.

### Genus DERECTIS, Clark.

Two species have been described by Clark in the 'Annals of Natural History,' 1865, and are contained in the collection of the British Museum. A comparison of the types has convinced me that Clark's genus is identical with *Antipha*, Baly, described in the same Journal and in the same year. Clark's name has, however, the priority, and should be retained.

*Pachytoma dives*, Karsch., 1881 =  
*Mesodonta submetallica*, Jac., 1888.

I think that this species was rightly placed by me in *Mesodonta*.

*Megalognatha Bohemanni*, Baly = *Cneorane foveicollis*, Jac.  
*Megalognatha elegans*, Baly = *Apophyllia elegantula*, Jac.

Baly was probably right in placing these two species in *Megalognatha*.

### *Stenoplatys robusta*, Allard.

A specimen kindly given to me by M. Duvivier, and named as above, differs entirely in structural characters from *Stenoplatys*.

## ENTOMOLOGICAL NOTES, CAPTURES, &c.

SOME PROMINENT FEATURES OF THE PRESENT SEASON.—This season will apparently resemble that of 1888 in the abundance of *Plusia gamma* and *Vanessa cardui*. For the past three weeks or more *P. gamma* has been extremely abundant, both in the daytime and in the evenings, and the swarms round lilac-bushes at dusk have been really extraordinary. With regard to *V. cardui* (which I have not taken here since 1888), I have seen two or three specimens, and have heard of several other captures in the neighbourhood. Hybernated specimens of *V. atalanta* have also been unusually common. A still more welcome feature of this year is the appearance in Enfield of another periodical insect, *Colias edusa*. Although I have been collecting Lepidoptera in this district for the past five years, I have never met with this butterfly till the present month, nor have I heard of a capture here of recent years. Last Saturday I saw a female specimen

of this insect flying across a meadow, in which I was standing net in hand. I was extremely surprised at such an unusual sight, and immediately gave chase, watched till *edusa* settled down, crept cautiously nearer and nearer till just within range, and then—off it flew! I again hotly pursued it, and had the satisfaction of seeing it fly over a tall hawthorn hedge. I spent the rest of that day in mental self-vituperation, as I never expected to see *edusa* again in Enfield. However, on the following Monday (Whit-Monday), I saw two others, and my spirits have risen accordingly, as I anticipate an “*edusa* year.” I believe the periodical abundance of insects has never been satisfactorily explained; it appears to me strange that *V. cardui* and *P. gamma* should turn up in abundance in seasons of such a widely different character as 1888 and 1892. If I remember rightly, the weather in 1888 was miserably wet and cold, whereas this summer bids fair to rival that of 1887.—HENRY D. SYKES; The Cedars, Enfield, June 7, 1892.

COLOUR-VARIATION IN THE OVA OF *BISTON HIRTARIA*.—I have read with interest Mr. Adkin's note (Entom. 129) on the “Colour-variation in the Ova of *Biston hirtaria*.” Last winter I received some pupæ of *Biston hirtaria* from London, and two of the insects emerged on April 6th. After pairing, I shut the female up in a box with lino, and the next day she laid thirty-three eggs, which were of a brilliant grass-green colour, which, after some days, gradually turned a darker green, and finally deep purple, the ends of the eggs falling in. The larvæ hatched out on May 8th, and are now nearly full-grown, having fed on plum.—DOUGLAS H. PEARSON; The College, Chilwell, Notts, June 11, 1892.

ASSEMBLING IN LEPIDOPTERA.—With reference to Mr. Sykes' interesting article on this subject (Entom. 84) I have pleasure in informing him that I have noticed this habit in *Melanthia rubiginata* on one occasion last autumn, as many as eight or ten males being around the female at one time, and on several of the males being captured their places were almost immediately occupied by others. The night was very warm, and the wind S.W. Another species which assembles is *Hepialus hectus*.—WILLIAM HEWETT; Howard St., York.

*Apogon* of Mr. Butler's remarks concerning the assembling of male Sphingidæ by means of a crippled female (Entom. 118), it is noteworthy that Weismann, in the ‘Theory of Descent,’ mentions that by pinning a female *Smerinthus* to a tree, in an exposed situation in a favourable locality for the species, she is sure, during the night, to be visited by a male of the same species, and will subsequently lay fertile ova. It seems remarkable that a pairing should be effected under such conditions. The following instance of assembling once came under my own observation:—Noticing a buzzing group of *Zygana filipendulæ*, I found it to consist of several males hovering over what appeared to be a recently paired couple of the same species. On separating the two, and removing the male, the attentions of another male were almost immediately accepted by the female, and pairing ensued. Merrin, in his ‘Lepidopterist's Calendar,’ mentions that *Lithosia caniola* may be obtained by “assembling” with a virgin female.—R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, May 19, 1892.

BREPHOS PARTHENIAS AT DELAMERE FOREST.—In the ‘Entomologist’ for last month (Entom. 146), Mr. Arkle records, for the first time, the capture of *Brephos parthenias* at Delamere Forest. I think it may interest him, and others of your readers, to know that it has been twice previously



taken there. I took one specimen, and saw two others, on April 18th, 1891; and I find it recorded also in the 'Naturalist,' March, 1887, as having been taken there by F. N. P.; *vide* also Dr. Ellis' list of 'Lancashire and Cheshire Lepidoptera,' p. 49. I have seen it there again this year.—E. CLARIBEL TOMLIN; Thorpe Villa, Chester.

LARVA OF *TORTRIX VIRIDANA* UNUSUALLY ABUNDANT.—The oak trees in Windsor Forest are now experiencing a very severe attack of the *Tortrix viridana*. It appears that every year this moth is present in some numbers, but this season it is exceptionally abundant. The trees are completely stripped of their leaves, giving the forest a very weird and wintry appearance. The beech and hawthorn, which occur scattered about amongst the oak, are not attacked, and form pleasant breaks in the otherwise dreary aspect of the wood. A week or two ago the larvæ were seen hanging in millions from the trees suspended by their fine silken threads. They have now, for the most part, changed into the pupal state, and the advanced guard of the imago is appearing. Birds are by no means as numerous as might be expected. Some rooks, starlings, and titmice were noticed. It might, perhaps, be mentioned that these oaks were planted somewhere about the beginning of this century, to provide timber for the royal navy. On the introduction of the ironclad, the forest seems to have become more and more neglected. Ought not some attention to be drawn to this fact, as it must be injuring what would otherwise be a valuable timber forest?—E. P. STEBBING; R. I. E. College, Cooper's Hill, June 16, 1892.

DELAMERE FOREST FORMS OF *HYBERNIA LEUCOPHÆARIA*.—I am indebted to Mr. South for the following comment on the four forms of this insect, described in my "Notes on the Early Moths" (see Entom. for May and June):—"Your form I. is typical; III., var. *marmorinaria*, Esp.; II. is intermediate; and IV. is a parallel variety with that of *H. marginaria* (*progemmaria*) var. *fuscata*."—J. ARKLE; Chester.

*PLUSIA GAMMA* AND *VANESSA CARDUI* AT CHESTER.—These insects are extraordinarily abundant just now in the Chester district, and have been so since the beginning of June. *P. gamma* is a complete nuisance when netting moths in the evening. I wonder if they appear as heralds of an "*edusa* year"!—J. ARKLE; Chester, June 13, 1892.

EARLY LEPIDOPTERA IN YORKSHIRE.—*Hybernia rupicapraria* and *H. marginaria* have not been so common this season in the neighbourhood of York; but from amongst a number of specimens of *H. marginaria* I have been able to select some very pretty forms connecting *fuscata* with the type; a very pretty form, which occurs sparsely, is that with a broad black border to the fore wings. It is rather singular that the *fuscata* form has become much commoner of late years; some ten years ago it was quite unusual to find a specimen; now it occurs almost as commonly as the type. Doubtless the very cold, wet, and sunless summers that we have had during the past few years have had something to do with it. I have also taken specimens of *H. leucophæaria*, including the variety *marmorinaria*, Esp., *L. multistrigaria*, and *A. æscularia*.—WILLIAM HEWETT; Howard St., York.

*COLIAS EDUSA* IN 1892.—

Worcestershire. — I have pleasure in recording the appearance of *Colias edusa* at Worcester during the present month. One worn female was caught by a boy near here, and brought to me for identification; another was seen by a friend at Monkwood; and two more I saw flying

along the roadside about six miles away. They were apparently all hybridized specimens, being much worn; and the two I saw flying and also the one brought to me were females, so I hope they will turn up in this district in August. I would like to know if other entomologists have noticed *edusa* so far inland this season? I do not think it has occurred here since the great "*edusa* year," which must be nearly twenty years ago.—WILLIAM H. EDWARDS; 11, Tything, Worcester, June, 1892.

*London*.—I was sitting in the Temple Gardens to-day, about 2 o'clock, when I saw a fine male *Colias edusa* fly across the lawn. The excitement among the sparrows was simply immense, but I am glad to say that the butterfly proved a match for his innumerable pursuers, and sailed calmly over the railings towards the city. I do not know whether this insect ever penetrated so far into London in 1877, the great "*edusa* year." I took it continually in North Middlesex at Harrow-Weald, but never to my knowledge has it been seen in the metropolitan area. It is quite possible that in some way or another it had been imported with the bedding-plants which have lately been put in, but I think its appearance sufficiently remarkable to call for special mention. I may add that I was with a friend who has considerable entomological knowledge, and he had no hesitation in immediately fixing the identity of the strange, yet very welcome, visitor.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, June 22, 1892. [This species was seen in London during August, 1877. Mr. J. H. Jones states that he saw "several specimens in the gardens on the Thames Embankment, near Charing Cross"; and Dr. Lang mentions seeing "one in a street leading out of Tottenham Court Road, and another in the neighbourhood of Russell Square" (*vide* Entom. x. 253).—ED.]

*South Devonshire*.—It may be worth recording that on May 31st, this year, I saw, at a place in South Devon, a fine specimen of *C. edusa*. The insect was a female, and was flying over a flowery meadow. It frequently settled, and I was able once to approach within a yard of it, and so was enabled to see that the wings were very bright in colour and in perfect condition. On June 3rd I saw, in my garden near Exeter, a male of *C. edusa*; this specimen also was in good condition.—ALBERT BONUS; Exeter.

*Surrey*.—On May 30th I saw a female specimen of *Colias edusa*, in fair condition, on Mickleham Downs; and I saw another, yesterday, near Leatherhead station. *Vanessa cardui* is common; and I have seen three *V. atalanta*.—T. H. BRIGGS; Surrey House, Leatherhead, June 9, 1892.

*Hampshire*.—I learn from Mr. C. Gulliver that *Colias edusa* is now common near Brockenhurst and "at Ringwood in dozens." This augurs well for another "*edusa* year." Mr. J. N. Young, of Rotherham, Yorks., also informs me that he saw a specimen of this insect near that place on 7th of June last.—ROBT. ADKIN; Lewisham, June 16, 1892.

*On the Borders of Hampshire*.—On the last two days of May I saw five *C. edusa*, and my brother saw two others. They were all observed in different places, some of them many miles apart, and were flying straight, fast, and appeared to be actuated by a common desire to get on and away to some other part of the country. Not one of them, unfortunately, gave us a good chance of capturing it, but I have not the least doubt about their identity.—W. M. CHRISTY; Watergate, Emsworth, Hants.

*Sussex*.—Several seen in the early part of June, by Mr. Tugwell, in the neighbourhood of Abbott's Wood (*ante*, p. 157).



*Croydon*.—My father saw a clouded yellow (*C. edusa*) flying along the Park Hill Road on 31st May; and on the 2nd June I also saw one on the railway bank between Croydon and London. It is the first I have seen near Croydon. The last one I caught was at Lexden, near Colchester, in 1883.—EDWARD NEWMAN MENNELL; The Red House, Croydon.

*DEIOPEIA PULCHELLA*.—Records of the recent occurrence of *D. pulchella* in England have been received as follows:—

*Southsea*.—"Let those laugh who win." This old proverb was well exemplified at the review on Southsea Common on Wednesday, May 25th, when a number of persons indulged in a good laugh at seeing a man—Mr. W. H. Mackett, head-master of St. Matthew's School, Gosport, and an ardent entomologist—rush after what appeared to be a very dilapidated specimen of a small common white butterfly, but which turned out to be one of the rarest of British moths, *viz.*, the crimson-speckled (*Deiopeia pulchella*), and which is consequently of great interest and value. In Newman's standard work on this branch of entomology, the number of British specimens is limited to about three; and Morris reports about the same number. This "good thing" of entomologists was caught in the thickest part of the crowd during the "march past," and must have passed thousands of persons during its peregrinations.—*Evening Mail*, May 27, 1892.

As regards colour, the description of the insect referred to above accords generally with that of Morris, except that the red dots near the exterior edge of the upper wing coalesce, forming an irregular line, and also that the red dots are more intense near the anterior edge. The back is shaded with yellow. As regards time of appearance, it differs considerably from either Morris's or Newman's work, in which the time given for the appearance of the insect is from July to September, but, unless double-brooded, I cannot account for the fact that the three most recently taken (two of which when caught had evidently only just attained the imago stage) were captured in May. Perhaps some of your readers may be able to shed a little more light on this point.—W. H. MACKETT; St. Matthew's School, Gosport.

*Christchurch*.—My son Wilfred took a very fine specimen of *Deiopeia pulchella*, on the 30th May, flying in a field adjoining Christchurch harbour. It appeared to be quite fresh from the pupa.—R. E. BRAMELD; Mudeford, Christchurch. [This appears to be the same specimen referred to by Mr. Adye.—ED.]

I have just learnt from my friend Mr. Brameld that a specimen of the above insect was taken by his son, on May 30th, flying in a field not far from the harbour. It is in such fine condition that it must have only just emerged from the pupa. I also know of another taken on the same day and in the same neighbourhood. Many of your readers may recollect that I recorded a specimen (*Entom.* xix. 157) as taken May 18th, 1878, and was at the time impressed with the idea it was a strange time of appearance; also its faded condition, when captured, caused me to suggest hybernation. This, however, was not considered to be the case by Mr. South, who added that the species is probably not permanently established in Britain. In consequence of this latter statement a discussion arose in the following numbers of the magazine (*Entom.* xix. 169, &c.).—J. M. ADYE; Christchurch, June 4, 1892.

On the 30th May (1892) I received from Mr. Shelton, of Christchurch, a living specimen of *Deiopeia pulchella*, taken by him at Christchurch on the 29th May.—JOHN H. ASHFORD; Stanpit Villa, Christchurch.

*Dover*.—Messrs. Allbuary and E. Knight, when collecting at Dover at Whitsuntide, were fortunate enough to obtain a specimen of *D. pulchella*. It was captured by Mr. Knight, and exhibited at the meeting of the North Kent Entomological and Natural History Society on June 8th.—H. J. WEBB; 3, Gunning Street, Plumstead.

This afternoon, May 28th, 1892, Miss Emden, eldest daughter of one of my near neighbours, and taking keen interest in natural history, came and awoke me from a sound sleep, stretched at full-length on my lawn, to say that she had caught such a pretty moth for me. My reply, in a semi-somnolent condition, was, "Oh, where is it?" when forth came a very much-crumpled handkerchief, with the captive secured in one corner. I expected to find that great rarity *filipendula* in a somewhat shiny and nude condition. However, I was most agreeably surprised, on opening the receptacle, to find a beautiful fresh female *D. pulchella*, and in very good condition, considering the manner in which it had been captured and conveyed to me. When the insect first attracted her attention it flew up and settled at a short distance off; after a few ineffectual attempts she finally captured it under a light cap she was wearing, and eventually transferred it to the handkerchief. I was soon awake, in fact wide awake enough to take it indoors to more secure quarters.—J. T. WILLIAMS; St. Margaret's Bay, near Dover, May 28, 1892.

June 6th. Since writing you last I have been diligently hunting the spot where the capture of *pulchella* took place. On the second day after, between 10 and 11 o'clock a.m., I caught sight of another, and had my net within six inches of it, but it again rose too quickly for me, and was carried away by the wind, which was blowing very hard at the time, and I lost sight of it altogether. The first one being a female I was in hopes of obtaining ova from her, and kept it alive for that purpose, but I did not succeed in getting any. I also took her out with me, with the view of attracting males, but was equally unsuccessful. I am not sorry that I tried these methods to increase my stock, although it has not added to the original beauty of the insect. It has given me satisfaction to know that I have not lost a chance for want of trying.—J. T. W.

*North of London*.—On the evening of the 31st of last month, I was going, about 8.15, to see a friend living about a quarter of a mile from my house, and passing down a green road with palings on each side, separating it from a field, I saw, resting on the top of one of the bars of the palings, what I took to be, at a few yards distance, *S. menthastri*. On going close up to it, judge of my intense astonishment on seeing not the common moth I thought it was, but a beautiful and evidently freshly-emerged *D. pulchella*, apparently just come up for its first flight. I could hardly believe my eyes, as it was about the last moth I should have expected to see in this locality. Of its identity there was no possible doubt; but by great misfortune I had nothing whatever to take it with, not even a pill-box. Whilst looking at it, and considering how I could take it, I took out my pipe, which was in a soft leather case, hoping to get it somehow into the case; but on putting the case close upon it, it flew off, settling in the road upon a blade of grass. I again got near it, and tried to put my soft felt-hat over it, but by this time it was alarmed and flew over the palings on the other side. I marked the spot where it settled, and saw it on a dried stalk, but on getting close to it, it once more took flight and disappeared altogether in the dusk. My disappointment was intense, and nearly caused me a sleepless night. I searched for it all round the place on the three following evenings, but have



never seen it again. On taking up my June number of the 'Entomologist,' which arrived just after I had seen this specimen of *D. pulchella*, I saw the two recorded captures of the species at Dover and Gosport. The questions arise:—Is this a "*pulchella* year"? Is the species double-brooded? What are the atmospherical conditions favourable to its appearance now? Does it feed on other plants besides *Myosotis arvensis* in nature.—(Rev.) J. SEYMOUR ST. JOHN; 42, Castlewood Road, Stamford Hill, N., June 13, 1892.

*Essex*.—On June 6th I took a specimen of this rare moth at St. Osyth; a few minutes later I saw another, but, having just swum a creek, I was not prepared for it, or could easily have taken this also. In September, 1874, when shooting, I saw two specimens of this rare species in a stubble-field at Birdbrook in this county.—EDWARD A. FITCH; Maldon, Essex.

*North Staffordshire*.—Mr. F. C. Woodforde, of Market Drayton, and I have been collecting to-day, June 25th, 1892, in some meadows on the north-west side of this border parish, our only known locality for *P. statice*. The weather was warm, and a light rain falling. We found that both *P. statice* and *T. chærophyllata* were plentiful this season, and as my friend wanted a supply of these moths, both for himself and for correspondents, we were busily engaged amongst them, when he aroused from the long grass a moth evidently very different from the ordinary species which frequent these meadows. I was a few yards from him at the time, but having no net ready he called to me for mine, so that we both saw it flying with a heavy sluggish flight for some seconds. The moth was readily caught, and judge of our surprise and delight to find that it was a slightly worn female specimen of *D. pulchella*, certainly a grand addition to our North Staffordshire list. In a neighbouring wood we found *A. sylvata* and *M. albicillata* fairly plentiful; and we also took single specimens of *E. heparata* and *T. batis*; and saw one *M. hastata*, which we failed to capture.—(Rev.) T. W. DALTRY; Madeley Vicarage, Newcastle, Staffordshire, June 25, 1892.

**VARIATION OF *D. PULCHELLA*.**—The fore wings are whitish or cream-coloured, and are traversed by five crimson and five, or, including the marginal row, six black transverse series of spots, which vary in size. In some specimens the spots composing each series coalesce and form bands; in other examples the black or the crimson only are confluent. Sometimes most of the black spots are absent, especially on the inner three-fourths of the wing, and often the crimson series are represented only by spots on costal and inner margins, with one or perhaps two between; in some examples the crimson spots are very pale. An apical oblique macular dash is generally present, but, like the other markings, is subject to modification, and may be entirely absent. The hind wings are white, with a black outer marginal border, which varies in width and in the outline of its inner edge; this last is often deeply indented just below the middle.—RICHARD SOUTH.

**MACROGLOSSA STELLATARUM AT HASLEMERE.**—This pretty hawk-moth has been visiting my garden the last few days, and even coming into the house. It stays at one plant for several minutes together, poising with invisible wing, and suddenly dipping for a moment into pansy blossoms. Its appearance, on the wing, fully justifies its English name of humming-bird.—T. P. NEWMAN; Hazelhurst, Haslemere, June 20, 1892.

**DEILEPHILA LIVORNICA AT DORKING.**—You may probably like to record the capture of *Deilephila livornica* (= *lineata*). I took it at rhododendron flowers in my garden at Dorking on 8th June. It bears the appearance of

a hibernated specimen, and was, of course, not improved by being taken in the net.—FREDERICK FLOOD ; Denfield, Dorking, June 11, 1892.

DEILEPHILA LIVORNICA NEAR CARLISLE.—On Friday, June 10th, a specimen of *D. livornica* flew inside the window at Headsnook, Carlisle, the residence of Mr. W. H. Porter. It is a fine example, but has slightly damaged the tips of its wings in a cyanide bottle, which was too weak to kill it quickly. It measures  $2\frac{3}{4}$  in. across.—MARY G. ROUTLEDGE ; Stone House, Carlisle.

DEILEPHILA LIVORNICA.—Mr. T. E. Newton, of Exeter House, Winchester, captured a specimen of this insect in very fair condition on May the 31st, at rest, in his garden. He has kindly presented the specimen to me.—E. B. NEVINSON ; 7, Staple Inn, W.C.

WHIT-MONDAY IN DELAMERE FOREST.—This was certainly one of my most enjoyable collecting days. Over the heaths and mosses round the lake of Oakmere, *Thecla rubi*, *Saturnia pavonia* (*carpini*), and *Anarta myrtili* were abundant, while hundreds of *Libellula quadrimaculata* and *L. scotica* (dragonflies) sported about in the heat and sunshine. (I am frequently asked to recommend a book on dragonflies. Let me advise those who are interested in these beautiful but rather neglected insects to get the 'Illustrated Handbook of British Dragonflies,' by W. H. Bath, published by Wesley & Son, 28 Essex Street, Strand, London. It is a thoroughly instructive and enjoyable book, well written, and well illustrated.) In the forest three of us took eight larvæ of *Geometra papilionaria* from birch. Over the buttercups—in deep, secluded, and shady lanes—flitted *Heliaca tenebrata* (*arbuti*). I could make a long list of common things, amongst which the palm for abundance would have to be given to the irrepressible *P. gamma*.—J. ARKLE ; Chester.

A FORTNIGHT IN THE NEW FOREST.—On Saturday, the 21st May last, I went to Brockenhurst to collect Lepidoptera, and stayed until the 7th June. With the exception of one dull and gloomy day, the weather was almost perfect, there being bright sunshine nearly all day long. The first insect I took was *Gonoptera libatrix* in my room in the house where I was staying, and later on in the evening I netted several nice specimens of *Panagra petriaria*. Commencing in earnest on the Monday, the following are the species I met with during my visit. Among the Rhopalocera, *Pieris brassicae*, *P. rapæ*, *P. napi*, *Pararga egeria*, *Cænonympha pamphilus*, *Lycæna icarus*, *Syrichthus malvæ*, and *Nisoniades tages*, were all very common. I took some rather variable specimens of the second brood of *P. egeria*, which appeared during the last few days I was there. Battered specimens of *Gonopteryx rhamni* were fairly plentiful ; and on the 24th May I sighted *Colias edusa*, doubtless hibernated, but a collector whom I met, and who had also seen it, seemed to think it was an early brood. *Argynnis euphrosyne* was plentiful, but rather worn after the first week ; *A. selene* put in an appearance on the 2nd June. *Nemeobius lucina* was scarcer than in former years, and very local. Hibernated specimens of *Vanessa poly-chloros* and *V. io* were to be seen now and then, but their condition was very seedy ; *V. atalanta* and *V. cardui*, on the other hand, were fairly abundant, and in fair condition ; I took two quite fresh specimens of *V. atalanta* on 6th June. *Pararge megæra* was tolerably plentiful ; but *Thecla rubi* and *Polyommatus phlæas* were represented by only one example



of each. *Hesperia sylvanus* appeared on 1st June, and *Epinephele ianira* on the 6th. Tree searching resulted in a few nice *Boarmia consortaria*, *B. repandata*, *Tephrosia luridata*, *Aplecta prasina*, and *Phalera bucephala*; *Melanippe montanata* was, of course, very abundant. I worked hard among the beeches for *Stauropus fagi*, but was unsuccessful; I hear it is very scarce in the forest now. Beating produced nice specimens of *Drepana falcatoria*, *D. cultraria*, *Zonosoma linearia*, *Z. punctaria* (1 only), *Acidalia remutaria*, *Bapta temerata*, and *B. bimaculata*: also *Eurymene dolabraria*. *Bupalus piniaria* was common flying round the firs; and on the heaths, *Bombyx rubi* and *Ematurga atomaria* were fairly abundant. *Plusia gamma* was met with in large numbers during the day, also *Venilia macularia* and *Panagra petraria*; *Iodis lactearia* was also frequently seen. Specimens of *Agrotis exclamationis*, *Apamea basilinea*, and *Hepialus lupulinus* were also met with. Although no rarities were met with, insects of the commoner species were plentiful; and, on the whole, I consider my visit an improvement on one I paid last year, when we had had a wet spring, and insects seemed scarce.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath.

NOTODONTA DICTÆA BRED.—On May 17th I bred a *Notodonta dictæa* from a pupa taken in March behind the moss on a fallen stump. This is the first I have met with in this neighbourhood.—DOUGLAS H. PEARSON.

SALLOWS IN YORKSHIRE: SEASON 1892. — These were well out by April 5th, on which date I and Mr. S. Walker, of this city, visited some near York, and found moths quite scarce. The only species which occurred in any numbers was *Cerastis vaccinii*, and most of these appeared to be in good condition. The other species noted were *Scopelosoma satellitia*, *Pachnobia leucographa* (two specimens only), *P. rubricosa*, *Tæniocampa gothica*, *T. instabilis*, three *T. populeti*, *T. stabilis*, *T. cruda*, and one *Calocampa exoleta*. I sugared a number of trees, but only one *C. exoleta* turned up. We noticed a few *Anticlea badiata* flying over the dog-rose; wind S.W. April 7th.—In company with Messrs. S. Walker and R. Dutton I again visited salallows. Moths scarce, the commonest being *C. vaccinii*, but this was not so abundant as on the 5th. *T. gothica* and *T. instabilis* came next in point of number. We also took a few *T. stabilis*, *T. cruda*, *S. satellitia*, three *P. leucographa*, and nine *T. populeti*: this latter species seems very difficult to get in good condition unless bred. Two *Hybernia marginaria* also dropped into sheets from off the salallows. April 9th.—Tried salallows at Strensall, near York, but only *T. stabilis* and *T. gothica* fell into the sheets. Sugared a number of trees on outskirts of Birch Wood, but on visiting them after dark did not see a single insect. About dusk *Larentia multistrigaria* began to fly fairly commonly, and I soon netted a couple of dozen nice specimens in fine condition. I noticed three or four males hovering about a small birch tree, as if "assembling," but although I searched diligently for her "ladyship" I could not discover her. After dark I searched the hedgerows, and obtained a few *Anisopteryx æscularia* and *H. marginaria*; also two *Asphalia flavicornis* ascending the hedge, evidently newly emerged specimens. During the afternoon I obtained several *L. multistrigaria* by searching the boles of oak, birch, and beech trees. April 11th.—In company with Messrs. E. G. Potter, of York, and W. Mansbridge, of Horsforth, I had another evening at salallows. Moths fairly common. We obtained fifteen *P. leucographa* males in splendid condition, six *T. populeti* (including fine banded form), and a good number of *T.*

*gothica*, *T. instabilis*, *T. stabilis*, *T. cruda*, *C. vaccinii*, also a few *P. rubricosa* and *S. satellitia*. We also saw a few *A. badiata* on the wing, and several *Diurnea fagella* at rest on the boles of oak trees. Wind due north; moon at full. April 19th.—In the morning slight frost, weather cold, wind N.E., but about noon wind changed to due south; so, in company with Mr. R. Dutton, we had another night at sallows. Commenced shaking about 8 p.m. Moths fairly common. Result, eighteen *P. leucographa* males, and one female, the first female taken up to this date; on being placed in seclusion, she kindly deposited about sixty eggs. The females seem to emerge later than the males. Five *T. populeti*, seven *P. rubricosa* males and two females (one of which laid about forty eggs), eight *T. gothica*, seven *T. stabilis*, nine *T. instabilis*, and a few *T. cruda*, one *S. satellitia*, and one *H. marginaria*, also one *T. opima*. On this occasion, whilst searching the sheets, I noticed the partiality of several of the Tæniocampidæ for light. *P. leucographa*, *P. rubricosa*, *T. stabilis*, *T. gothica*, and *T. cruda*, buzzed around the lamp and up the glass, in endeavouring to get to the flame, some of them actually getting inside the lamp and extinguishing the flame; they also crawled up our hands, arms and faces; one individual actually walked into my mouth—whether he mistook it for a “moth trap” I of course cannot state. April 22nd.—In the evening off to the sallows, and moths common; took fifteen *P. leucographa* at one shake. Total number of *leucographa* taken by myself and Mr. W. Mansbridge, of Horsforth, on this occasion was forty-seven, of which twelve were females; several of the males were, however, worn. One *T. gracilis*, also a fair number of *T. gothica*, *T. stabilis*, *T. instabilis*, *T. cruda*, and *P. rubricosa*, including two females of the latter species; also a few *C. vaccinii* and some six *T. populeti*, but most of these were worn. We also noticed a few *A. badiata* on outskirts of the Wood, and *D. fagella* at rest on oak trees. Saw the first *Selenia illunaria* of the season flying round a lamp about 10.30 p.m. April 23rd.—My seventh and last visit to sallows, in company with Mr. W. Mansbridge. We had the last and best night at sallows of the season. Commenced operations about 8 p.m. The best shake of the evening produced sixteen *P. leucographa*, four *P. rubricosa*, one *T. gracilis*, and a number of *T. stabilis*, *T. instabilis*, *T. gothica*, *T. cruda*, and *C. vaccinii*. Total result of the evening, fifty-one *P. leucographa*, including eight females. *T. instabilis*, *T. stabilis*, *T. gothica* and *T. cruda* were common; twelve *P. rubricosa*, of which four were females; two or three *T. populeti*, but these latter were so denuded of scales as to make them look like varieties. We also noticed a few *C. vaccinii* and *S. satellitia*. I sugared some trees, which later on in the evening were visited by numerous *C. vaccinii*; also a few *T. gothica*, *T. stabilis*, *T. instabilis*, two *T. gracilis*, *T. cruda*, and *S. satellitia*. We noticed a few *A. badiata* on the wing, whilst *D. fagella* was common, about 10 p.m., at rest on boles of oak trees. From amongst the many *gothica* and *instabilis* taken at sallows this season, I have picked out a fine and variable series of each for my own collection, including varieties *pallida* and *brunnea* of *T. gothica*; varieties *atra*, *cærulescens*, *trigutta* and *virgata-brunnea* of *T. instabilis*; also vars. *obliqua* and *pallida* of *T. stabilis*; but from among the numerous *P. leucographa* obtained I could find but very slight variation: the females, however, were darker than the males. After sacrificing several females of the last-named species, I managed to obtain ova from a few of them, although none laid freely, and several died without depositing any ova. Of those I obtained some were unfertile. The first larva hatched on April 26th, and from that date until May 4th others



appeared, and are now feeding on plantain. As regards the sallow work, we found as a rule that the first shakes gave the best results; and I am of opinion that if light were used as a means of attracting the *Tæniocampidæ* it would prove remunerative. The absence of *T. munda* and the great scarcity of *T. gracilis* were certainly the remarkable features of our experience at sallows this year.—WILLIAM HEWETT; Howard St., York.

SALLOW BLOSSOM IN SUSSEX.—From March 23rd to April 11th I worked the sallows about every other evening, and was rewarded by getting nearly all the *Tæniocampas* and a few other things. *Pachnobia leucographa*, six specimens. *P. rubricosa*, twelve. *Tæniocampa gothica*, common. *T. incerta (instabilis)*, only two or three specimens. *T. stabilis*, very common and in great variety; one specimen is extremely pale, with a slight tinge of pinkish, the markings being scarcely visible. *T. gracilis*, six. *T. miniosa*, twelve. *T. munda*, twelve. *T. pulverulenta (cruda)*, very common. The weather during the greater part of the time was beautifully warm, but I did not notice many more moths than on some of the earlier nights at the end of March, when the weather was chilly and the wind in the north. The excessively bright sunny days brought out the blossom much too fast, and after April 11th I could not find a branch in blossom anywhere. Most of my sallows are in the copse woods, and are not very easy to work, as they are so crowded in with various kinds of small timber. When there are no convenient bushes, at the edge of rides for instance, I cut down branches and place them in suitable spots. These are just as attractive as the growing plant, but for one night only, and if you cut enough of them; but it adds much to the labour of collecting. The other species which I took at the sallow were:—*Xylina socia (= petrificata)*, one. *X. ornithopus (= rhizolitha)*, one. *Xylocampa areola (= lithorhiza)*, one. *Scopelosoma satellitia*, a few. Quantities of *Cerastis vaccinii* (I noticed no *C. ligula (= spadicea)*). *Eupithecia abbreviata*, two or three; &c.—W. M. CHRISTY; Watergate, Emsworth, Hants.

MOTH TRAPS.—Since I described my trap, in 1890 (Entom. xxiii. 231), I have not heard of anyone else adopting this very convenient arrangement for capturing moths. It seems a pity, because I find my trap so very useful, and I am sure that many other collectors of Lepidoptera would do so also, if they had one properly constructed. Some traps that I have lately seen for sale, with only a round hole as an entrance for the moths, instead of a long aperture *right across* the trap, as mine has, are not a success I am told. During April my trap was catching twelve to twenty moths a night. It is always set without regard to weather, and is seldom empty in the morning. On one of the last days of April it contained about fifty moths. It went on satisfactorily until May 28th, on which night it took the unprecedented number of 107 moths, exclusive of *Micros*. That night was a perfect one for light as regards weather, and so were the nights on each side of it, but they were unfortunately lost by bad management of the lamp. Since then I have had two takes of seventy and eighty moths, and never less than thirty. Twice, just lately, thirty-three species, exclusive of *Micros*, have been taken in the trap. Of the good things I have recently taken I may mention:—*Sphinx ligustri*, 1 (it is so perfect a specimen that I thought when I saw it this morning that it had been taken out of one of the breeding-cages); *Nola confusalis (= cristulalis)*, several; *Lithosia sororcula (= aureola)*, 1 (the only one ever taken here); *Cilia glauca*

(= *spinula*), 2; *Stauropus fagi*, 1 (the only one ever taken here); *Notodonta trepida*, 3; *N. trimacula* (= *dodonæa*), 4; *Demas coryli*, commonly; *Apamea basilinea*, 3 or 4; *Agrotis cinerea*, 4; *Pachnobia rubricosa*, 1; *Dianthæcia cucubali*, 1 or 2; *Hadena adusta*, commonly; *H. thalassina*, several; *Eurymene dolobraria*, 3; *Selenia lunaria*, 4 or 5; *Tephrosia luridata* (= *extersaria*), 1; *Bapta bimaculata* (= *taminata*), several; *Numeria pulveraria*, commonly; *Eupithecia pusillata*, 1; *Phibalapteryx vitalbata*, 2 or 3; *Cidaria silacea*, several. I have seen more species of the better class about this year than I have observed for several years past at this place, and last evening (June 3rd) the sugar was covered with moths; the first time I have seen it so, here, since 1888.—W. M. CHRISTY; Watergate, Emsworth, Hants, June 4, 1892.

FOOD OF THE LARVA OF *ASTEROSCOPIUS NUBECULOSA*.—Birch is generally considered to be the proper food of this species; but elm, hornbeam, buckthorn, and guelder rose have been mentioned as food-plants. Quite recently I have found that the larva will eat willow, and is very fond of honeysuckle. I have ascertained by experiment that the larvæ will do very well for two or three days on a diet of these plants, but I am not prepared to say that they would thrive if supplied with honeysuckle and willow only. When birch can be obtained it should be given, but those plants I have mentioned will be found useful as occasional substitutes.—RICHARD SOUTH; 12, Abbey Gardens, N.W.

A CORRECTION.—I find that the insect taken by me at Lytham last year was not *Lycæna adonis*, but a variety of *Lycæna icarus*, male, with barred fringes to the wings [*vide* Entom. xxiv. 267].—G. RENSHAW; Sale Bridge House, Sale, Cheshire.

A SATURDAY HALF-HOLIDAY AT RICKMANSWORTH.—On the 11th of June last I went out for a few hours' collecting in the neighbourhood of Rickmansworth. On alighting at the station, I at once made my way for some grey poplar trees (*Populus canescens*), upon which I had on the previous Saturday evening found several larvæ of *Taniocampa populeti*, but I only obtained one caterpillar of the species this time. However, I collected a nice lot of rolled poplar leaves, from which I hope to breed *Padisca ophthalmicana* later on, and possibly also *Orthotania branderiana*, as I have obtained both species in the locality in former years. Having operated on the birches without any satisfactory result, I next visited a meadow situated near the railway and about halfway between Rickmansworth and Northwood stations. In this meadow I have seen *Ino statice* fairly common, but only one specimen was netted on this occasion. *Zygana jilipendula* and *Z. trifolii* were both out, and I secured some nice specimens of each, including two examples of the confluent form of the last-named species. Both species were flying together. *Epinephele ianira* was just emerging, as also was *Camptogramma bilineata*. The larva of the latter insect is a grass-feeder, but the imagines resort to the hedges soon after emergence from the pupa, and, as is well known, are often a great nuisance to the collector engaged in hedgerow work. Soon after 7 p.m. the evening flight of *Emmelesia albulata* commenced, and was at its height about 8 o'clock. A little later, numbers of *Miana fasciuncula* were to be seen darting about, and soon afterwards *Hepialus lupulinus* began to scour the plain. I netted a number of *Miana*, but all were *fasciuncula*, not a single *M. strigilis* among the lot. From time to time larger moths dashed across the



line of sight, and when within reach were made captive. Among the specimens thus added to the bag were *Leucania comma*, *Apamea basilinea*, *Grammesia trigrammica* (= *trilinea*). On the way to the station, specimens of *Emmelesia affinitata*, *E. decolorata*, and a very pretty example of *Melanippe montanata*, were netted.—RICHARD SOUTH.

THE INSECT FAUNA OF MIDDLESEX.—Mr. Cockerell is quite correct in his statement (Entom. xxv. No. 349, p. 132) that Oxhey Lane is just in Hertfordshire according to the Ordnance Survey Map. The lane, however, extends to join the main road from Pinner to Stanmore about a mile into Middlesex, and those insects recorded as observed by me in the "Preliminary List of the Insect-Fauna of Middlesex" have been either seen or taken on the Middlesex side of the border only, where I live. I could add a good many species that are found just on the dividing line, notably in the woodland that extends along the London and North-Western Railway to the left going north, but such insects properly belong to Hertfordshire. About a fortnight ago *A. euphrosyne* and *A. selene* were flying about the bugle-flowers, whilst *T. tages* and *H. malva* were always well represented, with *P. geryon*, *S. clathrata* (which I have never found in Middlesex), and other spring Lepidoptera. The railway bank by Oxhey Lane bridge is a capital hunting-ground, the bridge itself being a favourite haunt of *B. perla*.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, June 20, 1892.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—June 1st, 1892.—Mr. Robert McLachlan, F.R.S., Treasurer, in the chair. The Hon. Walter Rothschild sent for exhibition *Neptis mimetica*, n. s., from Timor, mimicking *Andasena orope*, one of the Euplœidæ, and *Cynthia equicolor*, n. s., a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpinii* and *S. pyri*, and specimens of *Callimorpha dominula*, var. *romanovii*, var. *italica*, and var. *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of Rhopalocera made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked that the various species of *Neptis* were usually protected and imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen, and others continued the discussion. Mons. A. Wailly exhibited about fifty species of Australian Lepidoptera, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of lepidopterous ova. Mr. F. Merrifield exhibited a series of *Drepana fulcataria*, half of which had been exposed for a week or two, in March or April, to a temperature of about 77°, and the other half had been allowed to emerge at the natural out-door temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir, and others took part in the discussion which followed. Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh. Canon

Fowler exhibited the egg-case of a species of *Mantidæ* from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire. Mr. McLachlan called attention to the re-appearance in large numbers of the diamond-backed moth, *Plutella cruciferarum*, which was very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated. Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias edusa* in different localities near London. Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other *Vanessidæ*. The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacraea*.—W. W. FOWLER, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 26th*, 1892.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Jenner Weir exhibited a specimen of *Anosia plexippus*, L., var. *erippus*, Cramer, which Mr. Weir remarked had been obtained by one of the employés of Captain Parke in the Falkland Islands. Until this insect was captured, the only butterfly known in these islands was *Brenthis cytheris*, Drury. During Capt. Parke's residence in the islands he had never seen there a specimen of the *Anosia* in question; it therefore appeared that, like its northern representative the true *Anosia plexippus*, the southern form had the migratory habit similarly developed. Mr. Hawes exhibited and contributed a note on a series of *Pieris napi*, L., bred from ova laid by the parent insect taken near Bentley, Suffolk, June 10th, 1891, seven males and a female imagines appearing from 21st to 31st July. The remainder of the brood stood over until the spring, and thirty-one emerged between the 6th and 20th of May. Mr. Hawes suggested that the cool summer of last year affected the pupa to such an extent as to retard three-fifths of the brood. Mr. Jenner Weir said this was the most interesting exhibition he had ever seen on this subject, the two forms of the species, viz., the summer and spring emergences, having both appeared from a single brood reared under exactly similar circumstances. Mr. Frohawk, a pupa of *Argynnis paphia*, L., and made some observations as to the time occupied in the pupal change; he also suggested that the brilliant metallic markings mimicked a dew-drop on a dead leaf. Mr. Tugwell, specimens recently taken by him at Tilgate Forest, including *Syrichthus malva*, L., approaching the var. *taras*, Meig.; *Nisoniades tages*, L., showing variation; varieties of *Argynnis euphrosyne*; also an extremely pale variety of *Anisopteryx æsculi*, Schiff., taken by Mr. Hamne, of Reading. Mr. R. Adkin, a bred variety of *Asteroscopus nubeculosa*, Esp., and remarked on the species remaining in pupa for two or three years, those now exhibited having pupated in 1890. Mr. Tugwell stated he had bred them the first season. Mr. Hill, *Tæniocampa gothica*, L., and var. *gothicina*, from Rannoch. Mr. Carpenter, an example of *Vanessa antiopa*, L., taken on Tooting Common some years back. Mr. Adkin called attention to the unusual abundance of *Plusia gamma* on the last few evenings. Mr. Dobson, Mr. J. A. Cooper, Mr. Frohawk, Mr. Adye, Mr. Winkley, Mr. Tutt and Mr. Barrett also made some observations thereon. Mr. Jenner Weir delivered a zoological lecture, in which he drew attention to some remarkable cases in which mammalia and birds, having been in remote geological times differentiated for one mode of life, had adopted entirely different habits.—H. W. BARKER, *Hon. Sec.*



**BIRMINGHAM ENTOMOLOGICAL SOCIETY.**—*June 4th to 7th.*—A three days' excursion was made to Sherwood Forest. A party of ten made Edwinstowe their headquarters, from which they worked Thoresby Park, and that part of the forest more specially called Sherwood. They were mainly lepidopterists, who were not rewarded with anything new. Many larvæ of *Eupheria fulvago* were taken; a few *Notodonta trepida*, *Eurymene dolobraria*, &c., were found on tree trunks, but nothing of special note. A few dipterists, who were of the party, were rather more fortunate, taking some nice Syrphidæ on the hawthorn bloom, including such species as *Criorhina floccosa*, *C. berberina*, &c. They also took commonly on the furze flowers the fine "Daddy," *Pachyrrhina crocata*. Glorious weather was enjoyed, and, considering that, the number of insects met with was disappointingly small.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

**CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*April 29th.* 1892.—The President in the chair. Messrs. R. Freeman, B.A.; E. B. Marriott, B.A.; W. Bateson, M.A.; and Dr. Sharp, F.R.S.; were elected members of the Society. Mr. White exhibited *Plusia interrogationis* from Radnorshire, and a very dark variety of *Smerinthus tilia* taken at Cambridge. Mr. Moss, some good varieties of *Taniocampa stabilis* and *T. instabilis*, and specimens of *Hybernia progemma* var. *perfusca*, *Venusia cambriacaria*, &c., from Windermere. Mr. Farren read a paper on "Protective Resemblance." Several of the lichen-feeding species of Lepidoptera were mentioned as affording good instances, and the prevailing colour and style of markings of many species of fen Lepidoptera as affording them protection by the likeness to dead reeds and sedge, on which the moths are in the habit of resting. The paper was illustrated by an exhibition of about forty species of fen Lepidoptera, comprising seven large families and thirteen genera; also specimens of *Bryophila muralis* and *B. perla*, *Cleora lichenaria*, *Leptogramma literana*, and living larvæ of *Geometra vernaria* and *Cleora lichenaria*. Messrs. Moss, Trase, Jones and Farren continued a long discussion on the subject, many instances being quoted to support the theory of protective resemblance, the unanimous opinion of the meeting being in favour of the theory.—WM. FARREN, *Hon. Sec.*

**NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—The usual fortnightly meeting was held on Wednesday, June 8th, at the Royal Assembly Rooms, Woolwich, Mr. J. Woodward presiding. The attendance was good, and at the conclusion of the ordinary business the following members exhibited specimens:—Mr. Wilson, larvæ of *Endromis versicolor*, *Drepana lacertinaria*, *Trichiura crategi*, *Asteroscopus nubeculosa*, and *Lasiocampa quercifolia*, and contributed remarks on the feeding. Mr. H. Broughton, *Polyommatus phleas* (two splendid vars.), &c. Mr. W. Broughton, some striking varieties of *Smerinthus tilia*. Mr. Povey, several species of Lepidoptera, including *Melitæa aurinia*, *Acronycta leporina*, *Bapta temerata*, *B. bimaculata*, *Hadena genistæ*, &c. Mr. T. Moore, several species of Lepidoptera, and a few preserved larvæ of *Vanessa urtica*. Mr. Poore, Micro-Lepidoptera. Messrs. E. Knight and Allbuary showed their captures at Dover, which included *Colias edusa*, *Nemeobius lucina*, and many other species; but the gem in the box was the specimen of *Deiopeia pulchella*, taken by Mr. Knight on Whit-Monday, and recorded, *ante*, p. 167.—H. J. WEBB, *Secretary*.

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## ON THE EARLIER STAGES OF *HESPERIA LINEOLA*.\*

By F. W. HAWES.

AFTER disappointment in the season of 1891, I am now able to give a life-history of *Hesperia lineola*, partly from ova obtained from the captured imago, and partly from larvæ taken by sweeping and searching in the known haunts of the butterfly. By confining several females of the species with two or three kinds of coarse grass (*Triticum*) in a glass jar placed in the sun, a quantity of ova were laid in August, 1890, and some of the larvæ from these lived long enough to complete the first moult. Again, in August, 1891, a still larger number of ova was obtained from captured females, but these all (with two exceptions) failed to emerge, owing, as I believe, to a lack of moisture in their surroundings just previous to the period of emergence. However, by assiduous searching and sweeping, I was able to take three larvæ of an *Hesperia* on the evening of the 4th June; and again, on the 18th June, three others were taken (two by Mr. E. Joy), in all respects similar to the first, on the now well-known ground at Leigh, Essex, viz., the sea-wall extending from Leigh in the direction of Canvey Island. Judging from the fact that *H. lineola* is by far the most abundant of the two species of the "Skipper" genus that have been noticed on this sea-wall, I came to the conclusion that the six were larvæ of *H. lineola*, which is now sufficiently confirmed by the emergence on 13th and 18th July of two perfect insects, well-marked male specimens, the first bred by Mr. Joy and the second by myself.

Before proceeding to a description, it may be well to correct an error with regard to both *H. thaumas* and *H. lineola*, which appears to be accepted as fact. Neither species passes the winter in the larva state. The eggs are laid at the end of July and beginning of August, and remain as such until the following

\* Paper read before a meeting of the South London Entomological and Natural History Society, June 23rd, 1892. Revised July 19th.



spring, emerging about April 20th, *i. e.*, after March winds have subsided, and more genial and warmer weather has set in, and the young blades of various grasses have attained some little height above ground. On the 8th of August, 1891, at Leigh, I noticed that the female butterflies were in excess of the males, and that beyond assembling on the heads of thistle and other plants, then in flower, they appeared anxious only to fly amongst the low-growing grass, and more particularly along the edge of the inland ditches, which are a feature of this and other parts of the Essex coast. Here, then, I presume, the eggs are laid, and although at different times I have noticed the perfect insects *in copulâ*, I have not, up to the present, been able to detect the female in the act of ovipositing; but by those captured and confined in the glass jar, with grass (*Triticum*) from the locality, eggs were very freely laid in the two seasons of 1890 and 1891. I should say, from observation, that each female is capable of depositing at least from thirty to forty eggs, these being, for the size of the insect, rather large, and in confinement laid in a row or rows in the sheath formed by the culm and main stem of the blade. From these and the sources above mentioned I append the following description.

The egg—which may be described as a rounded oblong and flat, *i. e.*, like a bean—is of a pale straw colour when first laid, the shell throughout, and even after the larva emerges, shining very much like mother-of-pearl. After about eight days the colour changes from pale straw to a deep yellow, and from that, in about three weeks, or about a month after being laid, to a dark leaden hue, and the young larva becomes plainly visible coiled on one side, the head being placed at one of the shorter sides. In this embryo state the larva remains all the winter, securely attached to the interior of a culm of a dry and stiff species of grass of the genus *Triticum*, common on sea-walls, and in this hidden position defies the mouths of straying horses and cattle (the grass being probably too coarse at this season for their consumption), and also the coldest of winters and heaviest of inundations, if at all subjected to these last, by reason of the stoutness and closeness of the texture of the egg-shell. In this respect the chief enemy to the species at this stage would seem to be the practice of burning the old grass in early spring, when, of course, the ova would perish, and the insect as a consequence appear in diminished numbers the following summer. About April 20th, judging from the last two seasons, the larva begins to awaken and moves slowly in the shell, and presently, piercing a hole, emerges, leaving behind a curiously-frayed opening, which gives evidence of the substantial character of the shell. So far as I have observed, the young larva does not eat the egg-shell, but immediately wanders in an upward direction, doubtless searching for the tender blades of grass. On emerging the larva is, in

general shape, a miniature of its form when full grown, thicker at the middle, and tapering towards the head and anal segments, and in colour is a pale yellow, with a black head and black plate on the second segment; when moving it draws up the hinder segments slightly, if disturbed, curling up into a ring in which the anal segments protrude. At this time its movements are by no means slow, but it evidently desires concealment, and rests in the middle of a blade of grass, reaching its head to one side and scooping out portions of the blade. I found, also, that in several instances the larva had further protected itself by spinning two silken cords from side to side of a blade over its back. After the first moult the head still continues black, the plate decreasing in size, and the colour of the body becoming paler, and with an inclination towards the green of the later stages. From this point I must depend on the larvæ obtained at large. One of these was so small as to have certainly moulted no more than twice, and had in this skin lost the plate behind the head and attained to a yellowish green, having a rather broad dorsal stripe of darker green, which stripe is continued as a distinct brown mark over the head to the mouth. On each side of this brown mark the head is paler, being of a faint brownish tint. There are two thin subdorsal yellow stripes, and a light line traverses each side just below the spiracles; the segmental divisions are yellow, and the belly and legs of a deeper and clearer green. In the next skin, *i. e.*, after the third moult, the only difference noticeable is the more pronounced colouring, especially of the head, where, besides the central brown mark, two others, one on each side, are present. This, with the body of a clearer green, gives the larva a more attractive appearance than is usual among this family of the butterflies. As distinguished from the larva of *H. thaumas*, this species appears to lose none of its active upward movements, and may be found by a close search at dusk, and no doubt during the night, near the tops of the blades of grass. In the next skin, *i. e.*, after the fourth moult, the only change noticeable is a still greater intensity of the previous colour and markings; and, further, that the distinction between this larva and that of *H. thaumas* can be readily taken in by a glance at the head of each: as above stated, in *H. lineola* this is a *pale yellowish, with three brown lines*; and in *H. thaumas*, a *whitish green, without lines*. At this time the resemblance of the full-grown larva to a grass-blade is very remarkable, the striped green of the body assimilating in a wonderful manner to the stem on which it rests, and the brown striped head corresponding accurately to a withered tip of the blade; doubtless this is a provision of nature on behalf of the larva against its foes. In this, and also in the previous skin, two white scaly excrescences are formed between the fourth and fifth or final pairs of prolegs, which excrescence is thrown off



with the skin, and forms afresh, being very noticeable in the full-grown larva. The larva, when full grown, spins the grass-stems together low down by a network of white silk, and changes to a long yellowish green pupa (in which the dorsal stripe of the larva is retained), and in this state it remains from about a fortnight to three weeks, according to temperature. About four days before the perfect insect emerges the wings assume their golden brown colour and the eyes become a brilliant crimson, changing in two days to black, and the black-tipped antennæ are then plainly visible through the pupa-case. The larva appears to be a slow and deliberate eater, living as such from about eight to ten weeks, and, when young, both spins in the interior of a blade and has the power of falling from a thread from the mouth; it also frequently retreats, when feeding, in a backward movement down the blade.

Grasmere, North Finchley, N., July 19, 1892.

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#### A CECID BRED FROM COCCIDÆ.

By T. D. A. COCKERELL, F.Z.S., F.E.S.

PROF. COMSTOCK, in the Report of the U. S. Department of Agriculture for 1880, records the breeding of a *Diplosis* from under the scale of *Aspidiotus juglans-regiæ*, Comst., in California. At the same time, he quotes from various writers on the habits of *Diplosis* and *Cecidomyia*, showing that *Diplosis aphidimysa*, Rd., and *Cecidomyia napi* live under Aphides;\* while many others live as guests in galls formed by different species. Inquiline Cecids are, in fact, quite numerous, and several might be added to the list given by Comstock; but very little appears to be known about those bred from Coccidæ, notwithstanding the interesting nature of the relationship.

In October last year some leaves of *Acalypha*, infested with species of *Parlatoria*, *Aspidiotus*, and *Dactylopius*, were sent to the Museum of the Jamaica Institute from the Parade Gardens, Kingston. From these were bred many specimens of the small *Diplosis*, described below under the name *D. coccidarum*.

Later, Miss L. A. Long gave me some pieces of *Coleus*, gathered in Kingston, badly infested by *Orthezia* and *Dactylopius*, and from these were bred many more of the same *Diplosis*. The empty Cecid pupæ were afterwards found sticking out from the masses of secretion, &c., formed by the Coccidæ. Again, quite recently, another specimen has been bred, which may be described as follows:—

\* Compare also the habits of *Diplosis grassator*, Fyles (Rep. Ent. Soc. Ontario, 1883, p. 30), which is associated with *Phylloxera*.

*Diplosis coccidarum*, n. sp.

♀. Length about  $1\frac{1}{3}$  millim.; thorax and abdomen scarlet, thorax quite dusky above, abdomen slightly so; legs blackish, inner side of femora pale; wings hyaline, strongly purple-iridescent. Antennæ about  $\frac{1}{2}$  millim. long, moniliform, with 14 ( $2 + 12$ ) joints, which are hairy (the last but sparsely so), and regularly diminish in size towards the end, excepting the two basal joints, which are shorter than the third. Crown of head with 5 or 6 hairs directed forward; thorax with many hairs directed backward; scutellum with 4 rather long hairs; each segment of abdomen fringed with hairs above and below; genitalia hairy; femora with a row of long hairs on one side; tibiæ and tarsi with only short hairs. Halteres large, pyriform, with only a few very short hairs. Antennæ inserted about half-way between mouth and crown; palpi of four joints, the first very broad and short, the second longer, and emitting several hairs, the third equal to the second, and emitting a single rather long hair, the fourth longest, with two short hairs at its end. Thorax not much arched; abdomen stout, with 8 segments plainly visible; ovipositor short; its basal joint largest, and broad when viewed from the side, emitting two long, and other shorter hairs, terminal joint very hairy, but the hairs mostly short. Wings hairy, lower margin with a thick fringe of long hairs; no cross vein; second longitudinal vein strong and straight; third longitudinal vein very weak, but with both branches continued to the margin.

Described from a fresh specimen, which emerged in a box containing leaves of *lignum-vitæ*, on which were *Aleurodes*, n. sp., and *Aspidiotus aurantii*, Mask., and a young fruit of *Anona*, partly covered with *Dactylopius*, n. sp. Hab. Kingston, Jamaica; emerged June, 1892.

Var. *a*, ♀. Antennæ 16-jointed, black; wings longer than body; body orange-red, legs brownish, hind legs as long as body + wings; length of body about 1 millim.; all the wing-veins distinct.

Described from specimens bred from *Coleus*, on which were many *Orthezia insignis*, Dougl., and a few *Dactylopius*, found in Kingston, Jamaica, by Miss L. A. Long.

Var. *b*, ♂. Smaller than var. *a*, only one specimen found, in



the same box with them. Body brown. Basal joint of forceps rather broad, grey, with one or two small hairs on its outer side; terminal joint brown, directed inwards, thick at its base, but otherwise long and slender. Prolongation of 3rd longitudinal vein very weak.

The specimen described as var. *a.* represents, I believe, only an individual mutation, and var. *b.* is in all probability the normal male. In the absence of positive proof as to this, it seems convenient to treat them as varieties; but the only special characters of var. *a.* are the better-defined third longitudinal vein, the paler legs, and the greater number of antennal joints. Of these characters, the first two are certainly variable, while the number of antennal joints has been found to vary in another species.\*

The specimen described as var. *b.* was the only male found, and no doubt its brown colour is a secondary sexual character.

It is to be observed that *Dactylopius* was the only Coccid genus present in every instance, so that if the *Diplosis* is associated with one genus in particular, it must be this. I do not suppose that it is a true parasite, but rather that it breeds under the Coccidæ, feeding on their refuse products.

Institute of Jamaica, Kingston, Jamaica, June 8, 1892.

## A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 134).

### LEPIDOPTERA.

*Emmelesia affinitata*, St., field at back of Bishop's Wood, Finchley side (*Vaughan*); Harefield, one in 1889 (*Wall*). *E. albulata*, Schiff., Mill Hill, two on the common (*South*); Old Oak Common, common (*Godwin*); at lamps in Millfield Lane (*Vaughan*); Ruislip, abundant, 1883 (*Watts*); Harefield, very common (*Wall*); Ealing (*Adye*). *E. decolorata*, Hb., Mill Hill, not scarce amongst ragged robin (*South*); Clutterhouse Lane, common, larvæ in capsules of *Lychnis diurna* (*Godwin*); Bishop's Wood (*Vaughan*); Harefield, rather common (*Wall*); Finchley (*Shepherd*); Ealing (*Adye*); [Northwood (*South*)].

*Eupithecia oblongata*, Thnb. (= *centaureata*), Mill Hill (*South*); common generally (*Godwin*); Camden Town, Kentish Town (*Vaughan*); Chiswick, common, larva on flowers of fennel and seeding cabbage (*Sich*); Harrow-Weald (*Rowland-Brown*); South

\* See Dr. B. Wagner on the Hessian Fly, in 3rd Rept. U.S. Entom. Commission, Appendix, pp. 12 and 14 (1883).

Hampstead, common (*Watts*); Harefield, a few in 1887 (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*). *E. subfulvata*, Haw., Mill Hill, at honey-dew at night (*South*); Hampstead, 1884 (*Watts*); Harefield, one in 1888 (*Wall*). *E. plumbeolata*, Haw., Bishop's Wood (*Vaughan*). *E. isogrammaria*, H.-S. (= *isogrammata*, Newm.), Dalston (*Prout*). *E. castigata*, Hb., Mill Hill (*South*); common generally (*Godwin*); Bishop's Wood (*Vaughan*); Harrow-Weald (*Rowland-Brown*); Highgate (*Shepherd*). *E. virgaureata*, Dbl., Hampstead (*Watts*). *E. fraxinata*, Crewe, Regent's Park (*W. Warren*, Entom. Soc., Sept. 1, 1886). *E. nanata*, Hb., Hampstead Heath, 1880 (*Watts*). *E. subnotata*, Hb., Mill Hill, several netted in the garden (*South*); Kentish Town (*Vaughan*); South Hampstead (*Watts*); [Kingsbury (*South*)]. *E. vulgata*, Haw., Mill Hill (*South*); common generally (*Godwin*); Kentish Town (*Vaughan*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); South Hampstead, common (*Watts*); Harefield, common (*Wall*); Highgate (*Shepherd*); abundant at Ealing (*Adye*); Dalston (*Prout*); [Kingsbury and St. John's Wood (*South*)]. *E. albipunctata*, Haw., Kentish Town, at light, Bishop's Wood, Highgate Wood (*Bartlett fide Vaughan*); Chiswick, larva common on *Heracleum sphondylium* (*Sich*). *E. absinthiata*, Clerck, London (*Rendall*, Entom. 1887). *E. minutata*, Gn., Hampstead Heath (*Watts*). *E. assimilata*, Gn., Highgate Road, at light (*Vaughan*); Chiswick, larva on red currant (*Sich*); Dalston (*Prout*). *E. subciliata*, Gn., Harefield, taken sparingly (*Wall*). *E. abbreviata*, St., Mill Hill, one at rest on an oak tree (*South*); Pinner Woods, 1882 (*Watts*); Highgate (*Shepherd*). *E. exigua*, Hb., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Hampstead, 1881 (*Watts*); [Kingsbury (*South*)]. *E. sobrinata*, Hb., Highgate Road and West Hill, common at light (*Vaughan*). *E. pumilata*, Hb., Mill Hill, at rest on palings (*South*); abundant at Ealing (*Adye*); [Stanmore Common (*South*)]. *E. coronata*, Hb., Mill Hill, netted in garden (*South*); Chiswick, at rest on a tree trunk (*Sich*); Hampstead Heath, 1880 (*Watts*); Highgate (*Shepherd*). *E. rectangulata*, L., Mill Hill, common on apple-tree trunks (*South*); Kentish Town (*Vaughan*); Isleworth (*Fenn*); Chiswick, common, larva in apple blossom (*Sich*); Whitton (*Rendall*); South Hampstead, generally black varieties (*Watts*); Harefield, taken freely some seasons (*Wall*); Highgate (*Shepherd*); Hammersmith (*Mera*). *E. rectangulata* var. *nigrosericeata*, Haw., Bedford Park (*Ckll.*); Dalston, the only form taken (*Prout*). Most of the above records of the species doubtless include this form, which is frequent in the London district. See Entom. 1888, p. 112 and p. 249; [St. John's Wood, a variety intermediate between this form and the type (*South*)].

*Lobophora halterata*, Hufn. (= *hexapterata*), Millfield Lane (*Vaughan*); Whitton (*Rendall*); see also Proc. S. Lond. Ent.



Soc. for 1887, p. 71. *L. viretata*, Hb., Chiswick, once only (*Sich*); Harefield, one in 1886 (*Wall*). *L. carpinata*, Bork., Harrow-Weald (*Rowland-Brown*).

*Thera juniperata*, L., Whitton (*Rendall*). *T. simulata*, Hb., Whitton (*Rendall*). *T. variata*, Schiff., Mill Hill, netted in garden (*South*); Hampstead Heath, 1880 (*Watts*); Highgate (*Shepherd*).

*Hypsipetes sordidata*, Fb. (= *elutata*), Mill Hill, bred from larva on sallow (*South*); Clutterhouse Lane, Hampstead, Kingsbury (*Godwin*); Bishop's Wood (*Vaughan*); Bedford Park (*Ckll.*); Chiswick (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Pinner (*Watts*); Harefield, common (*Wall*); Hammersmith (*Mera*); abundant at Ealing (*Adye*).

*Melanthia bicolorata*, Hufn., Mill Hill, very common, several bred from larvæ on plum (*South*); Bishop's Wood, Hampstead, Kingsbury (*Godwin*); Chiswick, not common (*Sich*); Whitton (*Rendall*); Harefield, two in 1889 (*Wall*); [Kingsbury, often abundant (*South*)]. *M. ocellata*, L., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath, common (*Watts*); Harefield, frequent (*Wall*); [Kingsbury (*South*)]. *M. albicollata*, L., Pinner, 1881 (*Watts*); in house at Kentish Town, July, 1881, perhaps an escaped specimen (*Shepherd*).

*Melanippe tristata*, L., Graemes Dyke (*Rowland-Brown*). *M. procellata*, Fb., one about 1866, Dartmouth Park (*Vaughan*); Harefield, one in 1889 (*Wall*). *M. unangulata*, Haw., Bishop's Wood (*Shepherd*). *M. rivata*, Hb., Bishop's Wood, Hampstead (*Godwin*); Chiswick, occasionally (*Sich*); Harrow-Weald (*Rowland-Brown*). *M. sociata*, Bork. (= *subtristata*), Mill Hill (*South*); Bishop's Wood (*Godwin*); Isleworth (*Fenn*); Chiswick, occasionally (*Sich*); Whitton (*Rendall*); Hampstead Heath, abundant (*Watts*); Harefield, frequent (*Wall*); Hammersmith (*Mera*); [Northwood, abundant (*South*)]. *M. montanata*, Bork., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Chiswick, occasionally (*Sich*); Harrow-Weald (*Rowland-Brown*); Hendon (*Watts*); Harefield, common (*Wall*). *M. galiata*, Hb., reported from Enfield Chace (see *Pract. Nat.*, 1883, p. 131). *M. fluctuata*, L., Mill Hill (*South*); generally common (*Godwin*); Kentish Town, Highgate (*Vaughan*); Isleworth (*Fenn*); Bedford Park (*Ckll.*); Chiswick, very common, larva on cabbage and garden nasturtium (*Sich*); Northend, Hampstead (*Ckll.*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); South Hampstead (*Watts*); Harefield, very common in the gardens (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Ealing (*Adye*); Clapton (*Bacot*); Bloomsbury (*Brit. Mus.*); Dalston (*Prout*). *M. fluctuata*, var. *neapolisata*, Mill. (see *Entom.*, 1888, p. 249). *M. fluctuata* [var. *costovata*, Haw. (see *Entom.* p. 136)], ab. *deleta*, *Ckll.* (*Entom.* xxii. p. 100), in St. John's Wood (*South*,

Proc. S. Lond. Ent. Soc. for 1886, p. 44). This aberration has also been taken at Catford, by Mr. Bouttell.

*Anticlea rubidata*, Fb., Mill Hill, one netted in garden, 1875 (South); Whitton (Rendall). *A. badiata*, Hb., Mill Hill, very common in garden (South); Clutterhouse Lane, and generally common (Godwin); Bishop's Wood (Vaughan); Whitton (Rendall); Harefield Common, very plentiful on April 20th, 1889 (Wall); Highgate (Shepherd). *A. nigrofasciaria*, Göze (= *derivata*), Mill Hill, rather common in garden (South); Clutterhouse Lane, and generally common (Godwin); Pinner, 1883 (Watts); Harefield, frequent (Wall); near Acton (Mera).

*Coremia designata*, Hufn. (= *propugnata*), Mill Hill (South); Millfield Lane (Vaughan); Chiswick, common in May and July (Sich); Whitton (Rendall); Hampstead Heath, common (Watts); Harefield, common (Wall). *C. ferrugata*, Clerck, Mill Hill (South); Highgate (Vaughan); Whitton (Rendall); Harefield, frequent (Wall); abundant at Ealing (Adye). *C. unidentaria*, Haw., Bishop's Wood, Hampstead (Godwin); Highgate (Vaughan); Chiswick, occasionally (Sich); Whitton (Rendall); abundant at Ealing (Adye). *C. quadrifasciaria*, Clerck, Whitton (Rendall).

*Campptogramma bilineata*, L., Mill Hill, a pest (South); generally common (Godwin); common everywhere (Vaughan); Isleworth (Fenn); Bedford Park (Ckll.); Chiswick, very common, larva obtained by sweeping grass in March (Sich); Whitton (Rendall); Harrow-Weald (Rowland-Brown); common (Watts); Harefield, exceedingly abundant (Wall); Highgate (Shepherd); Hammersmith (Mera); Ealing, abundant (Adye); Clapton (Bacot); Dalston (Prout). *C. fluviala*, Hb., Dartmouth Park (Vaughan); Hammersmith (Mera).

*Phibalapteryx tersata*, Hb., Harrow-Weald (Rowland-Brown); Harefield, once taken (Wall). *P. vittata*, Bork. (= *lignata*), Mill Hill, a female netted in a ditch (South). *P. vitalbata*, Hb., Mill Hill, one at light at Goldbeater's (South).

*Triphosa dubitata*, L., Mill Hill, two in the garden (South); Whitton (Rendall); Harrow-Weald (Rowland-Brown); Hampstead (Watts); Harefield, taken occasionally (Wall); Hammersmith (Mera).

*Eucosmia certata*, Hb., Mill Hill, one netted in garden, 1876 (South); Kingsbury, Regent's Park (Godwin); Chiswick, at flowers of bay tree (Sich); Hampstead (Watts); a few at Ealing (Adye). *E. undulata*, L., Bishop's Wood (Knaggs fide Vaughan); Harefield, two in 1887 (Wall).

*Scotosia retulata*, Schiff., Mill Hill, several beaten out of a hedge on the common (South); Clutterhouse Lane, Kingsbury (Godwin); Harefield, one in 1887 (Wall). *S. rhamnata*, Schiff., Mill Hill, two netted in garden, also bred from larvæ (South; see also Jäger, Proc. S. Lond. Ent. Soc. for 1887, p. 61); [Kingsbury (South)].

(To be continued.)



ON THE IDENTIFICATION OF *ATTACUS ATLAS*, LINN.,  
AND ITS ALLIES, WITH REMARKS ON SOME OTHER  
SPECIES OF THE GENUS.

By W. F. KIRBY, F.L.S., F.E.S., Assistant in Zool. Dept., British  
Museum (Nat. Hist.), S. Kensington.

WHILE lately looking over the British Museum collection of *Attacus*, I made some notes on synonymy, &c., which I think will be found interesting to lepidopterists.

Genus *ATTACUS*, Linn.

*Phalæna Attacus*, Linn., Syst. Nat. i. (2), p. 809 (1767).

*Attacus atlas*, Linn.

*Bombyx atlas*, Linn., Syst. Nat. i. p. 495, n. 1 (1758); Mus.  
Ulr. p. 366 (1764).

*Saturnia silhetica*, Helf., Journ. As. Soc. Bengal, vi. p. 41, n. 4  
(1837).

The commonest Indian form of this group, with two well-marked transparent spots on the front wings. It differs much in size, and the largest specimen in the British Museum expands very nearly a foot; it is probably the largest lepidopterous insect known. This insect generally stands as *Attacus atlas* in collections, and appears to correspond to the typical Linnean description of the species. *Attacus talus*, Hübn., *lorquinii*, Feld., and *taprobanis*, Moore, appear to me to be only varieties of this.

Var. a. *Attacus talus*, Hübn.

*Attacus talus*, Hübn., Verz. bek. Schmett. p. 156, n. 1615  
(1822?).

Aurivillius (Vet. Akad. Handl. (2), xix. (5), p. 144) quotes Cramer, Pap. Exot. t. 9, A. as the typical figure of *Attacus atlas*, Linn. In this he is so far correct that it agrees fairly with Petiver's figure, Gaz., t. 8, f. 7, which is the first cited by Linné, and which I should also have been inclined to regard as authoritative, but that Linné alludes to the *second* transparent spot on the front wings. The specimens most nearly agreeing with these figures in the British Museum are from Burmah. The transparent spots are of considerable size and breadth, and the second transparent spot on the front wings is generally absent. Hübner calls this form *Attacus talus*. It is also figured by Olivier as *Bombyx ethra*, Enc. Méth. Atlas, t. 9, fig. 2. *Attacus atlas*, Geyer (Samml. Ex. Schmett. iii.), from China, also seems to belong here.

Var. b. *Attacus lorquinii*, Feld.

*Attacus lorquinii*, Feld., Wien. Ent. Mon. v. p. 306 (1861);  
Maass. & Weym. Beitr. Schmett. ii. ff. 46, 47 (1873).

A large dark-coloured form from the Philippines, closely allied to *Attacus atlas*, as figured by Cramer, and probably not truly distinct. The second transparent spot of the front wings is obsolete.

Var. c. *Attacus taprobanis*, Moore.

*Attacus taprobanis*, Moore, Lep. Ceylon, ii. p. 124, pl. 127, ff. 1, 1a (1883).

This form differs from the true *A. atlas* in the transparent spots being small and triangular; the second transparent spot of the front wings is often obsolete. It is the ordinary form in Ceylon, but I have seen specimens closely resembling it from various parts of India.

*Attacus edwardsii*, White.

*Attacus edwardsii*, White, Proc. Zool. Soc. Lond. 1859, p. 115, t. 57.

A handsome species, with the second transparent spot on the front wings obsolete. Easily recognised by its very dark colouring, and the sharp contrast formed by its white markings.

*Attacus crameri*, Feld.

*Attacus crameri*, Feld., Sitz. Akad. Wiss. Wien. xliii. p. 31, n. 67 (1861).

*A. atlas*, Stoll, Pap. Exot. iv. tt. 381c, 382a (1782).

A very distinct species, with small transparent spots near the middle of the wings, instead of touching the dentated black line, edged outside with white, which crosses both wings in all the allied species.

*Attacus cæsar*, Maass.

*Attacus cæsar*, ♀, Maass. & Weym., Beitr. Schmett. ii. f. 22 (1873).

A female from Mindanao, greener than the allied species, with three transparent spots on each wing; the smaller ones, at least, contiguous to the white band.

*Attacus imperator*.

*Attacus imperator*, Kirb., Cat. Lep. Het. i. p. 746, n. 5 (1892).

*A. cæsar*, ♂, Maass. & Weym., Beitr. Schmett. ii. f. 23 (1873).

This insect comes from Bohol, not Mindanao, and differs so much from the supposed female that I dare not put them together without proof. There are three small transparent spots on the front wings, and two contiguous ones on the hind wings.

*Attacus* (?) *vitrea*.

*Phalæna arcuata-vitrea*, Perry, Arcana (1811).

Perry's figure appears to have been taken from a specimen belonging to the group of *Attacus atlas*, though he states that it



comes from South America. It is, however, very rough, and may possibly represent some unknown species allied, not to *Attacus*, but to *Rhescyntis hippodamia*, Cram.

#### AMERICAN GROUP OF ATTACUS.

##### *Attacus erycina*.

*Attacus erycina*, Shaw, Nat. Misc. vii. t. 230 (1797).

|| *Phalæna hesperus*, Cram., Pap. Exot. i. t. 68A (1775).

? *Bombix splendida*, Pal. de Beauv., Ins. Afr.-Amér. p. 133, pl. 22, ff. 1, 2 (1805?).

A widely-distributed species in South America, and occurring as far north as Costa Rica. The British Museum has specimens of a hymenopterous parasite (*Conurus flavicans*, Spin., one of the *Chalcididæ*), bred from its cocoons in Cayenne. *Attacus splendidus*, Beauv., from St. Domingo, may prove to be distinct, when we receive a series from that island; its alleged occurrence in Texas is certainly an error.

##### *Attacus orizaba*.

*Saturnia orizaba*, Westw., Proc. Zool. Soc. Lond. 1853, p. 158, t. 32, f. 2; Druce, Biol. Cent.-Amer. Lep. Het. ii. p. 189, n. 2 (1886).

*Attacus splendida*, Clem., Proc. Acad. Nat. Sci. Philad. 1860, p. 160; Hulst, Ent. Amer. i. p. 160 (1885).

Clemens's description applies fairly well to *A. orizaba*, and not at all to *A. erycina*; moreover, Hulst asserts that "*A. splendida* and *orizaba* have been proved, by breeding, to belong to the same species"; whereas neither *erycina* nor *orizaba* are rare in collections; and the British Museum possess both sexes of both. Again, Druce states that *A. orizaba* is common in Mexico, but becomes rare further south; while *A. erycina* is a much scarcer and more southern species.

#### NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 141.)

PROFESSOR SMITH is anxious to discover what my classification of the Noctuæ is based upon; at the same time he does not mention upon what he bases his own. He agrees with me in one thing, that the Trifidæ and Quadrifidæ of Guenée represent natural groups, and that is certainly more than other American writers have admitted in practice, if they have accepted the distinction theoretically. In fact, Guenée himself unfortunately failed to follow it strictly.

As I mentioned in my introductory remarks, the details of my arrangement of the genera of Noctuæ are subject to alteration, as I acquire more knowledge of the group, and I should judge that this may be the case with all arrangements.

*Eublemma hemirhoda.*

*Micra hemirhoda*, Walker, Lep. Het. Suppl. 3, p. 799 (1865).

*Anthophila roseifascia*, Walker, l. c., p. 803 (1865).

Java and New Guinea. Types in Coll. B. M.

It is possible, and even probable, that the following group may belong to the Deltoids, in which case it would stand close to *Mestleta*. In cases where the structural characters are almost identical in every particular, it is impossible, without seeing the larvæ, to be certain of assigning these little moths to their rightful groups: if their larvæ are semi-loopers they cannot be associated with the Eublemmidæ, the larvæ of which are of the typical Noctuid form characteristic of Guenée's Trifidæ, and therefore must necessarily follow them. This group, which structurally agrees with *Mestleta* in the fact that its posterior tibiæ do not exceed the femora in length, whereas in *Eublemma* the difference is very marked, may be called *Eumestleta*, with "*Thalpochares*" *patula*, Morrison, as type: this genus also includes *T. nuda*, Chr., *Anthophila virginea*, Guen., *A. vestalis*, Butl., and *A. ragusana*, Freyer.

*Eumestleta patula.*

*Thalpochares patula*, Morrison. (See Grote's Check-List, p. 37, n. 1042.)

*Tarache patruelis*, Grote (on label).

*Anthophila flammicincta*, Walker, Lep. Het. Suppl. 3, p. 801 (1865).

North and South America. Coll. B. M.

Grote's and Walker's types are in the Museum; the former is admitted by its describer to be a synonym of *E. patula*.

PALINDIIDÆ.

In his revision of this family M. Constant Bar has done wrong to include *Dyomyx*, Guen.; the form of the wings and palpi in the latter genus proves it to belong to the Pseudodeltoids of Guenée.

The genus *Eulepidotis*, Hübn., takes the green-coloured species of the *ilyrias* group, viz., *E. ilyrias*, Cr., *viridissima*, Bar, *chloris*, Bar, and allies. Nearest to *Eulepidotis* come *Palindia dominicata* and allies, viz., *P. argyritis*, *rectimargo*, *persimilis*, *candida*, and *santarema*: these are followed by the typical Palindiæ, *P. julianata* and allies, amongst which I have to record the following synonyms:—



*Palindia julianata.*

*Phalæna julianata*, Stoll, Suppl. Cram. Pap. Exot. p. 40;  
pl. 8, fig. 4.

*Palindia egala*, Walker, Lep. Het. Suppl. 3, p. 807 (1865).

Amazons. In Coll. B. M.

Var. *juncida*.

*Palindia juncida*, Guenée, Noct. ii. p. 277, n. 1076 (1852).

*Palindia aglaura* (part), Bar, Ann. Ent. Soc. Fr. 1876, p. 7;  
pl. 1, fig. 10.

Colombia (*Guen.*), Ega and Brazil. In Coll. B. M.

Var. *aglaura*.

*Palindia aglaura* (part), Bar, Ann. Ent. Soc. Fr. 1876, p. 7;  
pl. 1, fig. 11.

Amazons and Sao Paulo, Brazil. In Coll. B. M.

The above forms undoubtedly represent only one species.

We have typical *P. julianata*, and the darkest form of *P. aglaura*, taken by Dr. Traill on the Rio Madeira; also typical *P. julianata* and *P. juncida*, taken together by Bates at Ega; lastly, we have typical *P. juncida* and the dark form *P. aglaura* taken together by Dunkinfield Jones at Sao Paulo. There is, therefore, practical evidence that the three forms of *P. julianata* occur constantly together: the width of the bands on primaries is evidently a variable character, as is the width of the subapical costal pale spot.

*Palindia alabastraria.*

*Noctua alabastraria*, Hübner, Zutr. Exot. Schmett. figs.  
311, 312.

*Palindia punctangulata*, Walker, Lep. Het. xii. p. 848, n. 8  
(1857).

*Palindia pulchella*, Bar, Ann. Ent. Soc. Fr. (1876), p. 245;  
pl. 5, fig. 17.

Amazons. In Coll. B. M.

Allied to *P. detracta*, Walk.

*Palindia albula.*

*Palindia albula*, Bar, Ann. Ent. Soc. Fr. (1876), p. 12, n. 20;  
pl. 1, fig. 16.

*Palindia alabastraria*, Walker (not Hübner), Lep. Het. xii.  
p. 846, n. 3 (1857).

Amazons. In Coll. B. M.

It is evident that M. Bar failed to examine Hübner's figure, or he could not have re-described *P. alabastraria* under the name of *P. pulchella*. It is singular that he failed to observe the affinity of the latter to his *P. albula*.

*Palindia vincentiata.*

*Phalæna vincentiata*, Stoll, Suppl. Cram. Pap. Exot. v. p. 39 ; pl. 8, fig. 3.

*Palindia caudata*, Herrich-Schäffer, Aus. Schmett. fig. 136.

*Palindia ornata*, Bar, Ann. Ent. Soc. Fr. (1876), p. 11 ; pl. 1, fig. 13.

Ega, Amazons. In Coll. B. M.

## PHRYGIONIS, Hübn.

M. Bar has described several species of this genus to which my Amazon species are evidently closely related : if, however, his figures are reliable, as they appear to be, the forms of the Amazon will prove to be distinct from those of French Guyana. Thus *P. regalis*, Butl., resembles *P. stella*, Bar, but differs in the much broader purple belt on primaries and the consequently small orange spot (instead of a triangular orange belt) which follows it. *P. dives*, Butl., resembles *P. emilia*, Bar, but is larger, darker, has straighter and consequently more parallel bands across the primaries, and a distinct lunate renal stigma beyond the second belt.

*Palindia formosa*, Bar, seems to me to be an under-fed specimen of *Phrygionis corinna* ; beyond its inferior size, and slightly brighter and paler colouring, I see nothing to distinguish it.

(To be continued.)

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

DEIOPEIA PULCHELLA IN 1892: ADDITIONAL RECORDS.—

*Suffolk*.—On June 10th I took a specimen of *Deiopeia pulchella* at Felixstowe, Suffolk. It was flying by day over long grass.—A. W. MERA ; 79, Capel Road, Forest Gate, July 9, 1892.

*East London*.—I captured a female of this rare insect in this neighbourhood on June 3rd, between 8 and 9 o'clock a.m. I may also mention that I have taken, in this unusual locality, a specimen of *Dianthæcia capsophila*.—H. S. WOOLEY ; 65, East Ferry Road, Isle of Dogs, July 12, 1892.

*Hampshire*.—I captured one example of *Deiopeia pulchella* on the 25th May this year, in a field near Christchurch.—E. PERCIVAL HART ; Bow House, Christchurch, Hants, July 12, 1892.

An evidently freshly-emerged specimen of this insect was taken at Grange, on May 29th, by my friend Mr. T. H. Larcom. It was blowing hard at the time, and, after it was first recognised, it succeeded in hiding itself in the grass so successfully that an hour and a half was spent in searching before it was finally secured. In my copy of Kirby and Spence's 'Introduction to Entomology,' published in 1815, this insect is figured under the name of *Bombyx pulchella*.—W. T. PEARCE ; 2, Cranbourne Road, Gosport, July 18, 1892.



NOTE ON *DEIOPEIA PULCHELLA* AND *EUCHELIA JACOBÆÆ*.—With reference to the remarks (Entom. 166-8) concerning *Deiopeia pulchella*, there were large numbers of this insect on the wing in Malta on the 9th May last year. I am led to make this note from the fact that Newman, in 'British Moths,' p. 31, seems to imply all Europe when he says, "The moth appears in July." I took a single perfectly fresh specimen on the 24th August of the same year at Rosas Bay, on the N.E. coast of Spain. Also *Euchelia jacobææ*, which Newman, on the same page, says appears in July, was swarming here (Chatham) from the middle of May.—PHILIP DE LA GARDE; H.M.S. 'Pembroke,' Chatham, July 5th, 1892.

COLIAS EDUSA IN 1892: ADDITIONAL RECORDS OF CAPTURE.—

*Kent*.—I captured, on 30th May, a specimen of *C. edusa* on the "Warren," a piece of rough ground near Bexley Heath, and another in Joyden's Wood; they were both females, and in fair condition. I also saw several more on Dartford Heath, but was unable to secure any, owing to the high wind. I visited Dartford Heath several times afterwards, but did not meet with it again in this neighbourhood; but on 8th June I saw a male close to Eynsford, and a female on the downs near Shoreham.—P. T. LATHY; Warren Road, Bexley Heath, Kent, July 7, 1892.

*Essex*.—During the month of June I have seen several *C. edusa* flitting about Chingford, and, although I have tried hard to capture one, still I have not succeeded. All that I saw seemed to be in good condition. This is a very unusual sight in this locality.—PERCY G. CRANE; Chingford, Essex.

*Somersetshire*.—I had the pleasure of seeing a specimen of *C. edusa* at Clevedon, Somerset, on May 31st. *Vanessa cardui* and *Plusia gamma* were very frequently seen then and early in June, and *Nemophila noctuella* in numbers almost everywhere; the last named has scarcely been seen for some years previously. *Vanessa urticae* is now very common here in Wales.—T. B. JEFFERYS; Langhorne, Carmarthenshire, July 6, 1892.

*Oxfordshire*.—I saw a female *C. edusa*, at Cowley, on the 29th May, but could not secure it, as I had not a net with me. On the 6th of the following month I took a female near Bledlow, and on the 10th a specimen was seen near Shabbington Wood by a friend of mine. He did not notice its sex.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

*Hampshire*.—More than a dozen specimens have been reported to me as having been seen or taken in various parts of the Gosport district.—W. T. PEARCE; Gosport.

COLIAS HYALE IN WILTSHIRE.—It might interest readers of the 'Entomologist' to know that on the 19th of June last I caught a damaged specimen of *Colias hyale*, three miles north of Salisbury, in windy weather, with some rain.—C. G. SELIGMANN; 26, Clifton Gardens, Maida Vale, N., July 2, 1892.

VANESSA CARDUI AND PLUSIA GAMMA.—It may be interesting, in view of correspondence in the 'Entomologist,' to know that, when I left home (near Exeter) about three weeks ago, *V. cardui* and *P. gamma* were plentiful; the former were much worn, and evidently hibernated. There were swarms of *P. gamma* in the clover fields last August and September, but I had not seen a specimen of *V. cardui* for years, nor any of *C. edusa*, except one (a male), in September, 1889, when out shooting.—E. F. STUDD; 130, Queen's Gate, S.W., July 3, 1892.

**VANESSA POLYCHLOROS PUPE ON A STONE WALL.**—On Thursday last (July 14th), I took three pupæ of *V. polychloros* on a stone wall near Oxford; one of the insects emerged to-day (Saturday). My friend Mr. F. W. Lambert also took two pupæ of the same species from the same locality. —S. KIPPING; 13, St. Giles, Oxford, July 16, 1892.

**HYBRID OF THECLA SPINI AND T. ILICIS.**—In the summer of last year I collected a number of larvæ of *Thecla spini* from two bushes of *Rhamnus catharticus*; nearly all of these yielded imagines in course of time. Two out of this number differed from the type in having a dash of ochreous yellow in the centre of the fore wings, also a row of spots along the outer margin of the hind wings like that seen in *T. ilicis*. The under surface, however, was identical with that of *T. spini*. I may add that *Thecla ilicis* is to be met with in the same locality, and, I take it, that the form I have just described must be a mule between the two species, like that mentioned by Millière in the case of *Lycæna cyllarus* and *L. melanops*. —FRANK BROMILOW; Maison Maïssa, St. Martin Vésubie, Alpes Maritimes, July 7.

**PLUSIIDÆ IN ESSEX.**—*Plusia gamma* seems to have been very plentiful everywhere, although here it was not so plentiful as last year, when it seemed to be the only insect about. *P. iota* has eclipsed *P. gamma*, as it is to be seen in every direction in hundreds; every patch of honeysuckle seems to be alive with them. *P. chrysitis* is also extremely plentiful; while standing in front of a clump of nettles last evening, I netted eleven specimens of this species in three minutes, all of which were in good condition. Among other moths that seem very plentiful this season, I might mention *Uropteryx sambucaria* (which flits about at dusk as plentiful as the white butterfly in the daytime), *Metrocampa margaritata*, and *Hepialus humuli*. —PERCY G. CRANE; Chingford, Essex, July, 1892.

**PLUSIA MONETA AT TUNBRIDGE WELLS, 1892.**—I had the good fortune to take three fine specimens of *Plusia moneta*, at light, on the 11th, 12th, and 14th inst., within a very short distance of the place where I captured a specimen on the 3rd July, 1890 [recorded Entom. xxiii. 334]. I caught two specimens on the 12th, but one got out of my net. The garden where they were caught abounds with monkshood (*Aconitum*). —R. A. DALLAS BEECHING; 24, St. James Road, Tunbridge Wells, July 13, 1892.

**PLUSIA MONETA IN MIDDLESEX.**—On July 9th, while working with the net over flowers, in the dusk (about 8.30), I took a moth which was totally unknown to me. On taking it to Mr. Cooke, of Museum Street, he pronounced it to be a specimen of *Plusia moneta*. I was still further fortunate enough to take another specimen, under exactly similar conditions, on July 14th. —C. R. PEERS; Harrow-Weald, Middlesex.

**STAUROPUS FAGI, &C., IN WICKHAM WOOD.**—On Monday, June 20th, I went to Wickham Wood, and took three fine females of *Stauropus fagi*, between noon and one o'clock. Two were at rest on a fence, and the third on a beech-trunk about two feet from the ground. Surprised at my success, as I had heard that *S. fagi* was now seldom to be found at Wickham, I went again on the following day, and took a fine specimen of a male on a pine-trunk about seven feet from the ground. Among my other captures on the tree-trunks were *Macaria notata* (4), *M. liturata* (8), *Boarmia consortaria* (2), *Tephrosia extersaria* (abundant), *Ypsipetes impluviata*, *Aplecta*



*nebulosa*, *Cymatophora fluctuosa*, *Lobophora hexapterata*, and *Melanthia albicillata*.—C. M. WELLS; Hurstfield, The Avenue, Gipsy Hill, June 28.

ASSEMBLING OF AMPHIDASYS BETULARIA. — On June 5th, I bred a female *Amphidasys betularia*, and, having seen *A. strataria* mentioned in Mr. Sykes's list of assembling species, I thought that the female of this species might also prove attractive to the males. I therefore enclosed the insect in a cage, similar to that recommended by Dr. Knaggs in the 'Lepidopterist's Guide,' and placed it on a tree in our garden for six nights in succession, with the following results:—June 5th, 6 males, first at 9.15, last at 9.45; 6th, 16 males, first at 9.45, last at 11.30; 7th, 2 males, first at 9.55, last at 10.10; 8th, 7 males, first at 9.45, last at 11.20; 9th, 2 males, first at 9.45, last at 10.5; 10th, 2 males, first at 9.45, last at 10.30. The weather did not appear to make any difference to the moths "assembling," as on the 5th and 10th the nights were bright, with warm south-westerly breezes; and on the other four nights it was very bright, but with cold winds from the east. I usually found the males came most freely between 9.45 and 10.15.—P. T. LATHY; Warren Road, Bexley Heath, Kent, July 4, 1892.

ZYGÆNA FILIPENDULÆ var. CHRYSANTHEMI.—On or about the 24th of last month, in a field a few miles from Hastings, in which *Z. filipendulæ* were swarming, I took a melanic specimen of that moth. The fore wings are smoky black, with green and rosy gloss showing; the six spots black, and apparently slightly raised. The hind wings are dull black.—C. A. BIRD; Rosedale, 162, Dalling Road, Hammersmith, W., July 5, 1892. [We congratulate our correspondent on his good fortune in capturing a specimen of var. *chrysanthemi*, Esper, a rare aberration of *Zygæna filipendulæ* (see Entom. xxiv. 234).—ED.]

ABERRATION OF ZYGÆNA LONICERÆ.—A short time ago I captured a remarkable variety of *Zygæna loniceræ*. The wings on the left side are of the normal size, and the markings differ in no way from the type; but those on the opposite side were somewhat dwarfed and very misshapen. There is, moreover, what must be considered as an elongated extra spot, measuring in extent rather more than twice the largest spot, placed on the inner margin of the fore wing near the base.—F. BROMILOW; St. Martin Vésubie, Alpes Maritimes, France, July 1, 1892.

MACROGLOSSA STELLATARUM ABUNDANT IN NORTH DEVON.—Although the weather is wet and stormy here just now, there is an extraordinary number of *Macroglossa stellatarum* flying about the town. It is very interesting to watch these pretty creatures hovering about the *Valerian*, of which plant there is a quantity growing near the pier. This morning I observed numbers of these moths flying about the blossoms in the pouring rain. I have captured a few specimens, but all are worn and not worth setting. I may add that yesterday I went over to Lynmouth, where I was told that *M. stellatarum* had been very common in the village for some time.—J. A. COOPER; Ilfracombe, July 5, 1892.

MACROGLOSSA STELLATARUM IN JERSEY.—Wherever I have been this year this species seemed to abound in such numbers as I have never seen before. Just now I am staying in Jersey, and I can fairly say that *M. stellatarum* is as common here as *Pieris brassicæ*.—W. J. KAYE; Dudley House, Bagot, Jersey.

**MACROGLOSSA BOMBYLIFORMIS IN LINCOLNSHIRE.**—I am not a subscriber to Mr. C. G. Barrett's new book on the British Lepidoptera, and therefore do not know whether it is a useful work in the matter of localities; but ever since its publication was announced I have not ceased to wonder why no notice has appeared in the 'Entomologist,' requesting collectors to furnish lists of localities. This course was adopted by the late Edward Newman, before issuing his 'British Butterflies,' with a very satisfactory result. Of course, in the case of rare species, one does not expect the exact locality to be specified. No doubt most of your readers know that in Stainton's 'Manual,' for instance, Cambridge (or Ca. in abbreviated form) embraces a district of certainly not less than ten miles round the famous University town. Well, the foregoing thoughts have been suggested to me by the fact that, although I have been collecting since 1866, I could never succeed in obtaining even a type of *M. bombyliformis* in the way of exchange, nor had I ever encountered the species personally, until May 26th, 1892. On that day I was collecting in a wood near Wragby, and captured two specimens of *Macroglossa*, hovering over blue bugle (*Ajuga reptans*) in a sunny riding of a large wood, where, if the truth must be told, *Hesperia paniscus* disports itself at that period of the year. I thought no more about my two *Macroglossa* until I came to set them out, when I discovered one to be the long-sought-for *M. bombyliformis*. On May 27th, I took another in the same wood, and on May 28th five more, making a total of seven; but after that day I could only find *M. fuciformis*. The two species seem to be of very similar habit, and hover over blue bugle flowers, during sunshine, in the damp ridings of large woods. So far as my knowledge extends, *M. bombyliformis* has of late years occurred very rarely in the British Islands, and I think that if any of your readers have come across it, a short account of the occurrence would be extremely interesting. All my specimens were in very fine condition, having travelled several miles alive in glass-bottomed boxes without sustaining any injury.—(Rev.) G. H. RAYNOR; Panton Rectory, Wragby, July 16, 1892.

**BUTTERFLIES SCARCE IN JUNE AND JULY, 1892.**—I should be very glad to know whether anyone has noticed a considerable diminution in the number of butterflies (generally) about lately. During the hot weather at the end of May there were quantities about, but since then I have seen very few. On the 3rd July, I walked from Cobham to Maidstone, most of the way being through country, and under conditions very favourable for butterflies; but the only insects I saw were *Pieris brassicae*, a few; *P. rapæ*, a few; *Euchloë cardamines*, a very much damaged male; *Colias hyale*, or very pale *edusa*, one; *Argynnis aglaia*, three, perfect; *Vanessa urticae*, frequent, perfect; *V. atalanta*, frequent; *Epinephele ianira*, everywhere; *Cænonympha pamphilus*, a few; *Thecla rubi*, two, damaged; *Lycæna icarus*; *Hesperia sylvanus*.—PHILIP DE LA GARDE; H.M.S. 'Pembroke,' Chatham, July 5, 1892.

**FOOD OF THE LARVA OF ASTEROSCOPUS NUBECULOSA.**—In addition to the plants mentioned by me, *ante*, p. 173, I find that the larva of *A. nubeculosa* will eat plum freely. Mr. McArthur informs me that the larvæ do well on pear.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood.

**COSMOPTERYX ORICHALCELLA IN DORSETSHIRE.**—Among other good Micro-Lepidoptera I took two specimens of *C. orichalcella* by sweeping among rough herbage in Bere Wood, near Bloxworth, on the 7th of July,



1892. One specimen was in beautiful condition, the other worn. This insect has not, I believe, been previously recorded in Dorsetshire.—(Rev.) O. PICKARD-CAMBRIDGE; Bloxworth Rectory, July 16, 1892.

SCYBALICUS OBLONGIUSCULUS IN DORSETSHIRE.—I took six specimens of this beetle at Ringstead, Dorsetshire, on the 1st July this year.—(Rev.) F. O. PICKARD-CAMBRIDGE; 5, Henry Street, Carlisle.

NOCTUÆ IN DORSETSHIRE.—Three nights' sugaring in Bere Wood, near Bloxworth (July 7th, 8th, and 11th) produced the following result:—*Cymatophora duplaris*, common. *Thyatira batis* and *T. derasa*, rather scarce. *Leucania lithargyria*, *L. impura*, and *L. pallens*, abundant. *Xylophasia rurea*, abundant. *Apamea gemina*, common. *Miana strigilis*, common. *Noctua plecta*, common. *N. ditrapezium*, six specimens. *N. triangulum*, *N. brunnea*, and *N. festiva*, exceedingly abundant; on an average about a dozen or more of these three on every tree. *Triphana subsequa*, one specimen. *Aplecta herbida*, two specimens—one fine, one worn. *A. nebulosa*, exceedingly abundant. *Euplexia lucipara*, exceedingly abundant. *Mania typica*, one specimen. *Caradrina blanda*, common. Besides these, *T. pronuba*, *T. orbona*, *Xylophasia polyodon*, and other universally abundant insects, were swarming; and a few species of *Agrotis* were beginning to make their appearance. — A. W. PICKARD-CAMBRIDGE; Bloxworth Rectory, July 16, 1892.

A REMINISCENCE.—Mr. E. L. Layard, writing in the 'Field' (June 18th), says:—"Fifty-one years ago I was living at Cambridge, and scoured the country round in search of Lepidoptera. On the Devil's Dyke, the old Saxon rampart near Newmarket, I found *Colias edusa* and *C. hyale* (the clouded yellow and pale clouded yellow) in some abundance. My late wife, then a girl, took numerous specimens of both on the heath, between Isleham and Mildenhall, and got bitten in the foot by a viper in the pursuit. She also took several examples of *Deiopeia pulchella* (the crimson speckled footman) in the larval and perfect stages. I exhibited these rare butterflies, and a specimen of *Vanessa antiopa* (the Camberwell beauty), taken by my brother-in-law from a little lad who had knocked it down with his cap in a lane at Bottisham, near Cambridge, and was only too proud to give them to 'the doctor,' to Professors Babington, Henslow, and others, who were greatly pleased with them. I also gave specimens to that well-known entomologist, the Rev. Leonard Jenyns, who was then vicar of Swaffham, and to old Downie, the entomologist who supplied many rare things to the collectors among the undergraduates. Downie, in return, put me up to seeking the large copper butterfly. Acting on his suggestion, I went down to Yaxley Fen, near Huntingdon, and was fortunate enough to secure several fine examples of *Lycæna dispar*, and the scarce copper, *L. virgaurea*. I also took some fine *Papilio machaon*, and several rare British moths. This country is, I believe, now all drained, and, the food-plants of these rare British 'flies' being extirpated, the 'flies' themselves have all disappeared, I suppose. It would be interesting if any of your readers, living in that neighbourhood, would give us some information on this point. The year 1841 was a famous year for butterflies. I recollect the fields round Isleham swarming with *Ino statice* (the green forester), and the five-spot and six-spot burnets (*Anthrocera loti* and *A. filipendulæ*). Isleham, as its name implies, was in the Cambridgeshire fens, the 'Island hamlet.' It was approached from Fordham (another suggestive name) by a raised causeway. I believe all this country is now drained."

NOTES FROM SOUTH WALES.—During April and the early part of May larvæ of *Melitæa artemis* were simply swarming in the Penarth district, more particularly in one field, where some 2000 were taken by the members of the Penarth Entomological and Natural History Society, the majority of which have found their way to various parts of the country. At the end of May the imagines were very plentiful. During May several specimens of *Saturnia carпинi* were taken on Barry Island, and during May and June the larvæ have been very abundant, feeding on bramble. This is the first year we have come across *S. carпинi* about here. On May 14th, I was fortunate in taking, on Barry Island, a female of *Spilosoma fuliginosa*, which, although a cripple, kindly gave me a good number of ova, which have since hatched; the larvæ are now feeding well on dock-leaves. Another specimen was captured at Porthkerry, near Barry, by Mr. W. E. R. Allen; these two are the first of *S. fuliginosa* noted for this district. On June 12th it was again my fortune to take, at Penarth, *Macroglossa bombyliiformis*, as the insect was settled on the grass. It is believed two or three specimens have been seen on the wing. *Vanessa cardui* has turned up very suddenly in extraordinary numbers. None having been seen last season about here, seems to imply that the present visitors are immigrants. *Zygæna filipendulæ* is also literally swarming just now. Several *Arctia villica* have been taken on Barry Island. The aspect thus far promises a very good entomological season. — G. A. BIRKENHEAD; Downs View, Penarth, near Cardiff, June 27, 1892.

MICRO-LEPIDOPTERA OF BURTON-ON-TRENT.—The 'Transactions of the Burton-on-Trent Natural History and Archæological Society,' vol. ii., contains a list of the Micro-Lepidoptera of Burton-on-Trent and District, compiled by J. T. Harris, F.E.S., and Philip B. Mason, F.L.S., &c. A list of the Macro-Lepidoptera was published in vol. i. of the Society's 'Transactions.'—ED.

NOTES ON THE SEASON, NORTH STAFFORDSHIRE.—*E. debiliata* is just now out in abundance in some of the woods in this neighborhood. I took seven off one tree to-day in the rain, and altogether got about forty. I might have taken two or three times as many had I wished it. Sugaring about here has been very bad. On two or three apparently suitable nights there was hardly anything at all on the trees. On Wednesday I only took seven *A. tincta*, though the larvæ were abundant in the spring; whereas last year there were three or four on every tree. It was a showery night, and moths were abundant on the wing, but did not seem to care for the sugar; and so it has been all through this season. I have read with surprise how attractive sugar has been in the south. Last year, when useless in the New Forest, it was most successful here.—F. C. WOODFORDE; Market Drayton, Salop, July 9, 1892.

TAPINOSTOLA EXTREMA IN STAFFORDSHIRE.—On the 13th July, in a marsh near here, I took a single specimen of *Tapinostola extrema* (concolor) in moderate condition. The species has not been recorded from this locality before, but the district has never been thoroughly worked. I should visit the particular spot more often myself, but that it swarms with a terrible gnat, whose bite is most venomous. For two days after having been there my face and hands are so swollen that I am hardly recognisable, and one cannot wear a veil at dusk because one wants all one's eyes. *Plusia festuæ*, *Acidalia immutata*, and *Phibalapteryx vittata* (lignata) occur there



also; and *Hypenodes costæstrigalis*.—F. C. WOODFORDE; Market Drayton, July 24, 1892.

THE PROPOSED RIFLE RANGE IN THE NEW FOREST. — Persons interested in the New Forest will be glad to hear—if they have not already heard—that the vigorous opposition made, during the winter and spring months, to the Government proposal to acquire sites in the Forest for rifle ranges, to which I alluded in my previous note (February, 1892), has been successful. In the first place, the “Ranges Act, 1891,” under the authority of which the *whole* Forest was at the mercy of the War Office, has been repealed; and subsequently the objectionable clauses of the Military Lands (Consolidation) Bill, 1892—by virtue of which the Government, although giving up their greater powers, might still have retained 800 acres of the Forest—have been struck out in Committee. Further, a clause has been inserted in the bill last mentioned, providing that “Nothing in this Act shall authorise the taking of any land in the New Forest, or shall empower the Commissioners of Woods to grant, or lease, or give any license over any land in the New Forest.” The result of the recent agitation, and the consequent repeal of the “Ranges Act, 1891,” and the modification of the “Military Lands (Consolidation) Bill, 1892,” is to leave the New Forest in exactly the same position, legally, as it was after the passing of the “New Forest Act, 1877,” by which Act it was secured to the public as an open space, and the rights of the Crown to fell timber and make further enclosures were stopped. All naturalists and other persons interested in the Forest should feel much indebted to the Verderers and Commoners of the Forest, the London and local press, and to various individuals, for their continuous efforts, for many months, to preserve the Forest for the public, the happy results of which have been attained only after a long and uphill struggle, and the expenditure of a considerable sum of money.—H. Goss; Marazion, Cornwall, July, 1892.

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## SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 23rd, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Tugwell exhibited five varieties of *Argynnis selene*, Schiff., one example having three silvery spots on the upper surface of each of the inferior wings; *Melitæa athalia*, Rott., one specimen having one of the hind wings nearly black; *Syrichthus malvæ*, L., var. *taras*, Meig. Mr. Tugwell remarked that he had been recently collecting with Mr. Porritt in Abbot's Wood, Sussex, and in the course of eight nights he estimated they had seen 20,000 insects at sugar, and had taken 161 species of Macro-Lepidoptera. Mr. S. G. C. Russell exhibited a specimen of *Argynnis selene*, and another doubtful specimen, which, in the opinion of Messrs. Barrett, Tugwell, and Frohawk, might be either *A. selene* or *A. euphrosyne*, L. Mr. C. G. Barrett showed *Spilosoma mendica*, Clerck., bred by the Rev. W. F. Johnson, of Armagh; and *S. menthastris*, Esp., bred from larvæ from Belfast. Mr. Frohawk, a long bred series of *Melitæa cinxia*, L., showing considerable variation in depth of markings, one specimen having very dark suffused hind wings, whilst in others the central band of the fore wings was absent; a male of *Pieris napi*, L., intermediate between the spring and summer

forms, and approaching the spring form. Mr. Frohawk stated the ovum was laid June, 1891, and the larva pupated July, and emerged June, 1892. Mr. Hawes exhibited ova, larvæ, and pupæ, with imagines, of *Hesperia lineola*, Ochs., and read a paper describing the earlier stages of the species. He stated that the larva emerged in April, and fed for about eight or ten weeks, chiefly at dusk, on *Triticum maritima* and other coast grasses; the pupa was similar to that of *H. thaumas*, and was enclosed in a network of silk spun among the blades of grass.

July 14th, 1892.—The President in the chair. Mr. Oldham exhibited, among other species, *Dicycla oo*, L., and *Cymatophora ocularis*, Gn., taken at sugar in Epping Forest. Mr. C. Fenn, a fine series of bred specimens of *Psilura monacha*, L., from the New Forest, some of the specimens being very dark. Mr. Fenn stated the series was bred under normal conditions. Mr. R. Adkin, a pupa-case of *Sesia scoliiformis*, Bork., from which the imago had emerged. Mr. Tugwell remarked that the pupæ of this genus, particularly of *S. sphegiformis*, forced their way through the bark about one-eighth of an inch, where they should emerge, but on a change of weather to cold they would retreat back into the stem. Mr. Tutt said that *Nonagria typhæ*, Esp., had the same power of going up and down the stem. Mr. Adkin said he had always heard that *S. chrysidiformis*, when it pupated, threw up a sort of tower; he had bred the species many times, and had never seen this. Mr. Tugwell stated he had observed this on one or two occasions only in *S. sphegiformis*. Mr. Barrett showed a fine series of *Stauropus fagi*, L., taken by Mr. Holland at Reading; the specimens ranged from light to dark forms. Mr. Moore, a scorpion, and made some observations thereon. Mr. Hawes, living larvæ of *Lycana ægon*, Schiff., feeding on *Ulex europæus*, and contributed notes, and a discussion followed. Remarks were made on the abundance of *Colias edusa*, *Vanessa atalanta*, *Plusia gamma*, *Deiopeia pulchella*, and many other species. Mr. Fenn stated he had taken *Catoptria juliana*, Curt., flying over apple trees in his garden on three successive evenings, flying as nearly as possible at 8 o'clock; and just before, *Carpocapsa pomonella*, L., flew. Mr. Oldham referred to the small size of many oak-feeding species at Epping, which he attributed to the oaks having been stripped of their foliage by the larvæ of *Tortrix viridana*, L.—H. W. BARKER, Hon. Sec.

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — July 11th. — Mr. G. H. Kenrick, V.P., in the chair. The following exhibits were made:—By Mr. Wainwright, for Mr. Wynn, a specimen of *Stauropus fagi* bred from a larva found at Wyre Forest last year; also a box containing some of Mr. Wynn's captures made during the recent visit of the Society to Sherwood Forest, including *Hadena contigua*, *Acronycta leporina*, *Agrotis suffusa*, &c. Mr. Kenrick showed Sherwood captures; also *Aplecta herbida* from Trench Woods, and a few Scotch insects, including a fine red variety of *Smerinthus populi*. Mr. P. W. Abbott, a fine variety of *Arctia caia*, from a larva reared on coltsfoot; three specimens of *Stauropus fagi* from Wyre Forest; and a nice series of *Melanippe hastata* from the same place. Mr. W. D. Spencer, a bred specimen of *Acronycta alni* from near Rugby. Mr. C. J. Wainwright, Diptera taken at Sherwood this year; also a few taken in 1889, including *Xiphura atrata*, &c. Mr. A. Johnson, larva of *Anthocharis cardamines* found on pods of the white rocket, which they resemble very closely. Mr. R. C. Bradley, his Sherwood Diptera, and read a few notes upon them; they included two species of *Criorhina*, *floccosa* and *ruficauda*,



*berberina* also being taken by Mr. Wainwright; also other good Syrphidæ, and a few nice "daddies," including one perhaps new to the British list.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Friday, May 13th.*—Mr. Moss exhibited a very pale ochreous variety of *Amphidasys prodromaria*, *Noctua dahlia*, *N. brunnea*, *N. umbrosa*, *Hadena rectilinea*, *Pachnobia rubricosa*, *P. leucographa*, *Taniocampa gracilis*, &c. Mr. Farren, his collection of the "Thorns" and other Geometræ. Mr. Powell, a box of aquatic insects collected in the district. Mr. Ball, a very pale and a very dark variety of *Saturnia carpinii*. Mr. Farren, having attended the South London Entomological Society's Annual Exhibition, on the 5th and 6th of May, described, and remarked on, some of the exhibits, making especial mention of Mr. Merrifield's cases illustrating the effects of temperature (during the pupal stage) on the colouring of certain species of Lepidoptera; and Mr. J. Jenner Weir's *Papilio merope* and the various forms of its female, with the different species of Danaidæ they mimic for protection. The subject of mimicry was discussed at some length, Messrs. Langdon, Bryan, Jones, and Moss taking part.

*Friday, May 27th.*—The President in the chair. The Right Hon. Lord Walsingham was elected an honorary member of the Society. Mr. Freeman exhibited a very fine *Amphidasys betularia* var. *doubledayaria* taken at Cambridge; a beech leaf found in Norfolk, with a cocoon each of *Halias prasinana* and *Dasychira pudibunda* spun on to it, and the two specimens bred from them; *Hypsipetes ruberata* from Norfolk; and a large box of Lepidoptera, Hymenoptera, &c. Mr. Bryan, a box of Hymenoptera, Diptera, &c., to show instances of mimicry. Mr. Bull, *Xylina semibrunnea*, *Eupithecia indigata*, and *Hypsipetes ruberata*. Mr. Farren, a series of *Argynnis paphia* var. *valesina*, and other butterflies. Mr. Moss read some notes on different species of Lepidoptera which had come under his notice, chiefly at Liverpool and Windermere; the notes relating to the habits of *Chærocampa porcellus*, *Cossus ligniperda*, &c., being especially interesting. —WM. FARREN, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—*July 13th.*—Mr. Dutton exhibited bred specimens of *Ocneria dispar* (a very large female example), *Acronycta leporina*, *Pericallia syringaria*, and *Eupithecia fraxinata*, &c. Mr. J. Hawkins, bred specimens of *Anarta myrtilli*, *Geometra papilionaria*, &c., and varieties of *Spilosoma lubricipeda*. Mr. W. Hawkins, several species of Heterocera, including *Bombyx rubi* and *Eurymene dolobraria*. Mr. W. Hewett exhibited bred specimens of *Noto-donta dictæoides* and *Nemeophila plantaginis*; the latter were from Lincoln, and very dark in colour; a long and variable series of *Thera variata*; specimens of *Tephrosia biundularia* var. *delamerensis* from Doncaster, Sledmere, Selby, and York; also *Epione advenaria* and living larvæ from Doncaster, fine series of *Asthena blomeri*, *Venusia cambricaria*, and a variety of *Odontoptera bidentata*, from same locality.—W. HEWETT, *Hon. Sec.*

ENTOMOLOGICAL CLUB.—A meeting was held on the 6th of July at Loanda, Beulah Hill, Upper Norwood, the residence of Mr. S. Stevens, chairman for the evening. Mr. R. Adkin, of Lewisham, was elected an honorary member; and other business was transacted. Fourteen sat down to supper.—RICHARD SOUTH, *Hon. Sec.*

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## ON THE EARLIER STAGES OF *COLIAS EDUSA*.

By F. W. FROHAWK, F.E.S.

ON the 7th of June last I had the pleasure of receiving two live females of *C. edusa*, which Mr. S. G. C. Russell had taken in the Polegate district the previous day. He very kindly presented both to me, knowing I was anxious to rear this species from the egg. A few notes thereon may be of interest, as we are now in the height of an *edusa* season, after a lapse of fifteen years.

Upon becoming possessor of these lively females, I immediately went in search of a couple of suitable plants of clover for their reception, and in less than two hundred yards from my house I hit upon the very plants, which I soon had potted ready for them; curiously enough the plants I dug up had already been visited by *C. edusa*, as I found an egg upon each, which had, from their appearance, been deposited a day or two before, being then of lilac colour, and the following day they became light red. These two eggs I kept carefully under observation, and upon these further notes will be made later on.

I placed a female *C. edusa* on each plant, and enclosed them under a gauze covering. Upon the gauze I spread a little sugar and water, and placed them in the sun. At mid-day I found one female had deposited a few eggs, and towards evening I was pleased to see several more, about two dozen, had been laid by the same female; the other had also deposited a few ova. The female first referred to died the following day; the other appeared also to be in a dying condition, so I removed her from the plant, uncoiled her tongue and immersed it in treacle, which she immediately began to imbibe, and continued for fifteen or twenty minutes. Thinking she had taken enough I again put her upon the plant, and found her quite revived; she quickly deposited more eggs. The following day I treated her the same, and she recommenced laying and spent herself. On the 11th I was able to count at least three dozen eggs laid by her; in all, I counted



fully five dozen eggs upon the two plants. The larvæ commenced hatching out on the 13th June, thus remaining only about six days in the egg state.

Descriptions of the egg and young larva may be worth including, as they are stages which may have been overlooked by some.

The ova are deposited singly, and generally on the upper surface of the leaves of clover; some were laid upon the stems, and a few on the under surface of the leaves, but I believe the upper surface of the leaf is the site generally chosen; both the eggs I found upon the plants were in that position. They are laid erect, and are fairly conspicuous when a few days old from the brightness of their colour. The egg is  $\frac{1}{4}$  of an inch in height, and  $\frac{1}{3}$  its height in diameter, of an elongated ovate form, both ends much attenuated but rounded; it is slightly concave just below the summit; there are about twenty longitudinal keels, the majority of them running its entire length, a few beginning about  $\frac{1}{6}$  below the summit; it is very delicately ribbed transversely by about thirty-six in number. When first laid it is of a yellowish pearl-white, gradually becoming deeper in colour, approaching creamy yellow. When about twenty-four hours old it assumes a light copper-pink hue, from which it gradually deepens into a rosy orange-pink, the high lights glistening with blue, the orange colouring showing in shadow; both the summit and base are tipped with yellow; it retains the beautiful rosy colouring until about a day before hatching, when it finally changes to a leaden or purplish grey.

The two eggs laid at large hatched on the 11th June. The young larva upon emerging consumes the greater part of the shell, which is its first meal. It then measures  $\frac{1}{8}$  of an inch in length, and is pale ochreous or olive-yellow; the head black; both head and body are covered with short club-shaped spiracles, the club formation being at the apex; the longest and finest are situated on the anal segment, those on the head being extremely short but strongly clubbed. It feeds on the cuticle of the upper surface of the leaf.

From this point I will only briefly give notes, as further descriptions would occupy too much space.

The first moult took place on the 21st June, making the first stage to be ten days, which probably was of longer duration than is usual, as the weather became dull and cold on the day of hatching, and, continuing so, undoubtedly retarded the growth of the larva during its first stage. The time occupied between the third and fourth moults was much shorter; the third moult was during early morning on July 1st, and the fourth moult (and last) took place on the 4th, the larva feeding for only two days, as it fixed for moulting on the morning of the 3rd, and changed its skin

next day. On July 11th, being just a month since it emerged from the egg, the larva commenced crawling restlessly about. I then found it time to place a gauze covering over the plant, the plants having been entirely uncovered since the death of the females. After roaming about for several hours it attached itself to the gauze, early morning on the 12th, and pupated mid-day on the 13th, producing a male imago on the 31st July.

The above history refers to one individual, but I was successful in rearing almost the entire number, as I lost only one larva, which apparently was a weakly one all along; it succeeded in fixing up for pupation, but then died; two pupæ died soon after pupation, and a few I sent to a friend; therefore my casualties were but very few. I had in all about seventy-five pupæ, which all produced imagines, except those mentioned above.

My series consisting of sixty fine specimens,—twenty-nine males and thirty-one females,—which makes the proportion of sexes about equal. They exhibit but slight variation, either in size, colour, or pattern. With few exceptions, the most noticeable are two males with semitransparent secondaries, which is due to lack of colouring pigment, having, in certain lights, the appearance of being scaleless; another specimen, a female, has the marginal band pale smoky brown, tinged with pink, and the series of spots much enlarged, forming almost a median yellow band. Many of the males have the secondaries shot with a beautiful rose-purple bloom, which is entirely absent in the females. I have just succeeded in obtaining a few eggs from a female, captured yesterday; therefore I hope to rear a second brood this autumn.

August 20, 1892.

## A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 185).

### LEPIDOPTERA.

*Cidaria miata*, L., Mill Hill, two at sallow and two at sugar (South); Bishop's Wood (*Knaggs* fide *Vaughan*); Chiswick, once beaten from ivy (*Sich*); Oxhey Lane (*Rowland-Brown*); Harrow, 1881 (*Watts*); Harefield, one or two taken most seasons in the gardens (*Wall*). *C. corylata*, Thnb., Mill Hill (South); Bishop's Wood (*Vaughan*); Pinner, 1882 (*Watts*); Harefield, occurs sparingly (*Wall*). *C. truncata*, Hufn. (= *russata*), Mill Hill (South); Bishop's Wood, Hampstead, Kingsbury, Old Oak Common (*Godwin*); Whitton (*Rendall*); Harefield (*Wall*).



*C. truncata* var. *centum-notata*, Fab.\* Mr. Wall mentions this as the form most frequently taken at Harefield. *C. suffumata*, Hb., Mill Hill, common in the garden (South); Clutterhouse Lane (Godwin); [Northwood (South)]. *C. silacea*, Hb., Chiswick, once (Sich). *C. testata*, L., Mill Hill (South); Clutterhouse Lane, Kingsbury, Old Oak Common (Godwin); Bedford Park (Miss E. Sharpe); Chiswick, once from bramble bush (Sich); Hampstead Heath, common (Watts); Harefield, common (Wall); [Northwood (South)]. *C. fulvata*, Forst., Mill Hill (South); generally common (Godwin); Bishop's Wood (Vaughan); Chiswick, not common (Sich); Harrow-Weald (Rowland-Brown); Hendon (Watts); Harefield, common (Wall); Hampstead (Shepherd); [Kingsbury (South)]. *C. dotata*, L. (= *pyraliata*), Mill Hill, larvæ common on *Galium mollugo* (South); generally common (Godwin); Bedford Park (Rev. J. W. Horsley); Harrow-Weald (Rowland-Brown); South Hampstead (Watts); Harefield, frequent (Wall); Hampstead (Shepherd). *C. associata*, Bork. (= *dotata*, Gn.), Mill Hill, one netted in the garden, 1876 (South); Chiswick, common, larvæ on red currant (Sich); Harefield, occasional (Wall); Hammersmith (Mera, as *dotata*); Dalston (Prout).

*Pelurga comitata*, L., generally common (Godwin); Kentish Town (Vaughan); Bedford Park (Ckll.); Chiswick, common (Sich); Whitton (Rendall); Harrow-Weald (Rowland-Brown); South Hampstead (Watts); Harefield, one in 1888 (Wall); Hammersmith (Mera); Clapton (Bacot).

#### Subf. *Euboliinæ*.

*Eubolia cervinata*, Schiff. (= *cervinaria*, Newm.), Old Oak Common (Godwin); Bedford Park (Rowland); Chiswick, larva on *Malva* (Sich); Harefield, taken rarely (Wall). *E. limitata*, Scop. (= *mensuraria*), Mill Hill (South); Old Oak Common (Godwin); Harrow-Weald (Rowland-Brown); Harefield, frequent (Wall); Finchley (Shepherd). *E. plumbaria*, Fb. (= *palumbaria*), Hampstead Heath, common (Watts); Harefield, common (Wall); Old Oak Common (Mera); [Northwood, common (South)].

*Anaitis plagiata*, L., Bishop's Wood, Hampstead (Godwin); Whitton (Rendall); Harefield, a few of the autumn brood in 1885 (Wall).

*Chesias spartiata*, Fues., Hampstead Heath (Godwin); Haverstock Hill (Knaggs fide Vaughan); Harefield, plentiful (Wall). *C. rufata*, Fb. (= *obliquaria*), Hampstead Heath (Godwin).

#### Subf. *Sioninæ*.

*Tanagra atrata*, L. (= *chærophyllata*), Mill Hill (South);

\* In the case of a polymorphic insect, like *truncata*, it seems most convenient to use the specific name in the broad sense, as covering all the forms, and designate any special form by a name, even though it may be that which originally stood for the species.

generally common among cow-parsley (*Godwin*); field at Finchley end of Bishop's Wood, larva found (see Ent. Mo. Mag.) (*Vaughan*); near Harrow (*Rowland-Brown*); Hampstead Heath (*Watts*); Finchley (*Shepherd*); Old Oak Common (*Mera*); abundant at Willesden (*Adye*).

#### GENERAL CONSIDERATIONS.

Having now arrived at the end of the Macro-Lepidoptera, it seems opportune to consider some of the characteristics of the county fauna.

When the list was first suggested, two or three very excellent entomologists expressed the opinion that to catalogue the fauna of so small an area was rather a waste of time, since the distribution of the great majority of species in England was already ascertained, and it was not to be expected that a Middlesex catalogue would add any facts of importance. From this opinion I was inclined altogether to dissent; and now that a fairly large body of facts has been presented, I believe it is possible to show that the insect-fauna of Middlesex is well worthy of serious study, and is capable of throwing light on some of the problems of geographical distribution. Taking the county fauna as a whole, it may be said to consist of six groups of species:—

(1.) Species which belong to the fauna of the Thames Valley, and occur about as commonly in Middlesex as in the neighbouring counties. This includes most of the ordinary common species, and some that are more rare.

(2.) Species which belong to the fauna of the Thames Valley, but have become rare or extinct\* in Middlesex, probably, for the most part, within recent years. The species of *Argynnis* illustrate this class. It can hardly be doubted that *A. paphia* was at one time common in Middlesex, and probably *A. adippe*. They still occur numerously in the neighbourhood of Maidenhead, as reported by Dr. H. C. Lang (Nat. Hist. Notes, 1882, p. 108). The present writer well remembers an enjoyable walk, in company with Dr. Lang, to Dropmore, to see *A. adippe* in the woods, undisturbed by anybody except the entomologist. Probably many species have become sensibly rarer within the past fifty years, especially in the immediate neighbourhood of London. Some of the older entomologists could, doubtless, give valuable information on this point.

(3.) Species which belong to the fauna of the Thames Valley, but have become increasingly abundant in Middlesex of late years. This is another point on which information is much required; that there is such a class, I have little doubt. The decrease of woodlands and the increase of meadows, and especially

\* Stephens recorded *Sphinx pinastri* from near Colney Hatch Wood years ago, but the claim of this insect to be a native nearing extinction seems quite doubtful. See 'Brit. Nat.' Suppl., 1891, p. 49.



market-gardens, must have a tendency to favour the multiplication of certain species, such as *Abraxas grossulariata* and *Biston hirtaria*.

(4.) Species which do not belong to the original fauna, but have been introduced, and have now become common. These are chiefly household pests, as certain ants and cockroaches; and insects which occur on cultivated plants, especially in hot-houses.

(5.) Species which do not belong to the fauna, but have been introduced, accidentally or otherwise, and have not succeeded in establishing themselves. These have mostly occurred as single individuals, as, for instance, at the docks, where exotic species are frequently to be found. The means whereby an insect may be conveyed into Middlesex are now so numerous and varied, that the occurrence of almost anything is possible. The propriety of recording such accidental importations in a faunal list may be questioned; but it has been thought best not to omit them in the present case, partly because it is not always easy to be certain whether an insect was imported, and partly because we can only get a proper knowledge of the value of this factor in distribution by observing and recording the instances.

(6.) Species which do not belong to the fauna, but occasionally wander into Middlesex from their native districts. Such are the chalk species, common in Kent and Surrey; as, for example, *Lycæna corydon*. Looking through the list, several species may be noted which come under this head.

There is also a possible seventh group, which, if it has any real existence, is of great importance. This would consist of endemic species or varieties, and those having their origin and metropolis within the limits of the county, if not actually confined to it.

Nobody supposes that there are any species of insects peculiar to Middlesex; but if we permit ourselves to include the immediate neighbourhood of London on the south side of the Thames, and perhaps a small portion of Essex, there seems to be good evidence for the existence of a few characteristic forms of melanism, which have originated independently in the London district, and chiefly in Middlesex. That most or all of them have also been found far from London does not necessarily prove that the melanic varieties in Middlesex came from other counties, as, though they may not have spread from the London district any great distance, there is no reason why similar forms should not have arisen elsewhere, perhaps in several distant but suitable localities, quite independently. Supposing this to be the case, it would probably be found that when a species had two melanic races, say one in London and the other at Manchester, the *facies* of the two, when long series were compared, would be somewhat different.

All the above statements and suggestions are purposely of a very general character, because it is hoped that further information on many points will be available before any analysis of the details need be attempted. Sooner or later, it will be desirable to make a searching comparison between the fauna of the several localities and the present and past fauna of each locality, where they can both be ascertained. Where we know species to be non-existent in Middlesex, but abundant in Surrey or some other neighbouring county (*e.g.*, various chalk species), an analysis of the records of wandering specimens may help us to estimate the extent to which some insects stray from their natural habitats. If we can ascertain how many exotic insects are imported into London by various means, and of these how many succeed in establishing themselves, it may throw light on the changes produced in faunæ by immigration. It will, doubtless, be found that, if the circumstances are favourable, the introduction of a very few individuals is sufficient to start a thriving colony, but that many species may be introduced in numbers and yet never gain a footing. Thus it might possibly be shown that the non-existence of certain common continental species in England was not simply due to the intervening channel.\* One of the most striking features of the list is the absence of several species which are generally looked upon as common. It will be interesting to see whether they are really wanting or merely not observed (so many lists have been received that, in the latter case, they must be rare), and to ascertain the reasons for their non-appearance.

May I venture to suggest that Middlesex entomologists, especially those who have resided long in the county, should summarize their experiences as relating to the above-mentioned points, and send their notes to the Editor? Such notes might be gathered together and published from time to time under the heading, "Insect-Fauna of Middlesex," and would surely contain much of value that would otherwise be lost, or, if published, rendered more or less inaccessible by being scattered through various journals and various years.

(To be continued.)

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\* The mollusc *Clausilia biplicata* illustrates this. It is common on the continent, and yet almost extinct in England, occurring very locally near London. In fifty years it will probably be exterminated. Yet there is good evidence to show that it is an indigenous species, now dying out, and not a mere importation.



*COLIAS EDUSA*, *C. HYALE*, &c., IN ENGLAND IN 1892.

SOME of our correspondents have thought it necessary to apologise for sending us notes on the occurrence of *C. edusa*, but we can assure them that all observations on this, and other species which are erratic in their appearance in England, are of value. The present year bids fair to rival that of 1877 as an "*edusa* year;" therefore it would be well to make the record of the present occurrence of the species as full and complete as possible, so that some idea may be formed of the area of distribution and relative numbers throughout that area.—ED.

*Lancashire*.—I saw *Colias edusa* once on the 5th, and twice on the 8th, of June, on the nearest railway-cutting south from St. Bees. I am told also that one other had been seen about a mile off. Of *Vanessa cardui*, eight or more have been caught, and far more seen. I have occasionally caught this species in the spring since 1888. One—the last one—I caught to-day (July 13th). Of *V. atalanta*, which is much rarer than *cardui* here, I have caught two, and one was given me. I cannot say that I have noticed *P. gamma* commoner this year than last.—JOHN WEBSTER; Barony House, St. Bees, Carnforth, July 13, 1892.

*Devon*.—I have just returned from a fortnight's visit to Sidmouth, S. Devon, where I found *C. edusa* very plentiful along the coast. The cliffs there being very steep, make collecting extremely difficult, but I succeeded in capturing between fifty and sixty specimens in lovely condition. Towards the last two or three days they seemed to spread inland a little, for I took about a dozen in clover fields in the neighbourhood. Included in my series is a beautiful var. *helice*, and I missed another.—B. H. CRABTREE; The Oaklands, Grange Avenue, Levenshulme, Manchester, Aug. 11, 1892.

*Dorsetshire*.—*C. edusa* was very plentiful at Blandford, on the downs and in lanes, during last week.—(MISS) CLARIBEL TOMLIN; Long Ashton Vicarage, Aug. 13, 1892.

*Essex*.—At Chingford, on Sunday, Aug. 14th, I captured two females of *C. edusa*, perfectly fresh; a third specimen I saw escaped. On the following Sunday the insect was fairly abundant, and amongst my captures was one specimen of the var. *helice*. As this was my first excursion with the net after several years' abeyance, it was doubly gratifying.—W. T. LANE; 9, Teesdale Street, Hackney Road, E., Aug. 23, 1892.

*Gloucestershire*.—*Colias edusa* has been plentiful at Cheltenham.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, July 24th, 1892.

On June 27th I saw a female *C. edusa* here, and on July 7th, within a few yards of the same place, a male; also, on August 14th, two more. All were in good condition. This insect seems to be rare in this district; I have only met with five in the last ten years, the four mentioned above, and one in 1888.—N. F. SEARANCE; Mitcheldeau, near Gloucester, August 18, 1892.

On June 24th I captured, on Leckhampton Hill, near here, a much battered *Colias edusa*, and on July 8th saw another on the College ground. To-day I saw two more flying over the ground at the same time from the north-east. At the end of June they were said to be plentiful near the

Severn, I fancy near a clover field, where they swarmed last September. *Vanessa cardui* was plentiful in June here, and *Plusia gamma* extremely abundant. I had not seen *V. cardui* since 1889, when it was very common. Some *C. edusa* were taken that year, but I was not fortunate enough to capture it myself. — H. J. BURKILL; 3, Royal Parade, Cheltenham, August 20, 1892.

*Kent.*—On Saturday, August 6th, I succeeded in taking fifteen specimens of *Colias edusa* in a field near Strood, and on Monday, August 8th, twenty-nine specimens more from the same place, all in good condition; there were six males to one female. I may add that *Vanessa io*, *V. atalanta*, *V. cardui*, *V. urticae*, *Pieris napi*, *P. brassicae*, *P. rapae*, and *Pararge megæra* were exceedingly abundant in Chattenden Wood.—G. KIPPING; 13, St. Giles, Oxford, Aug. 12, 1892.

*Colias hyale* is beginning to appear at Folkestone; three specimens were captured there at the end of last week, and yesterday eleven others were taken.—R. ADKIN; Lewisham, Aug. 23, 1892.

One specimen of *C. edusa* seen in field close to the railway station at Broadstairs, Aug. 21st. *Vanessa cardui* common along the edge of the cliffs.—GEORGE W. OLDFIELD; Earl's Court.

I understand from Mr. Adkin that *C. edusa* is common at Folkestone, and that several examples of the var. *helice* have been taken.—R. S.

*Middlesex.*—Walking along the railway bank near Pinner Station (L. N. W. R.), on the afternoon of July 29th, I was surprised to find a female *C. edusa* resting on the flowers of the purple vetch, which grows there in great abundance. It was slightly rubbed, but otherwise a perfect specimen; and, as I took it just three hundred yards on this side the county stone, I may fairly claim it as a Middlesex insect. I have not seen *C. edusa* in this neighbourhood since 1877.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, Aug. 5, 1892.

I noticed a fine male *C. edusa* on the railway embankment near Northwood Station (Met. Rail.) on the 14th of August.—RICHARD SOUTH; 12, Abbey Gardens, N.W.

I saw two *Colias edusa* near Bowes Park Railway Station about 9.30 a.m.—H. WILDE; Enfield.

The following specimens of *C. edusa* have been taken in the neighbourhood of Harrow:—One worn female, June 8th; two fresh males, July 20th; and one fresh female, July 23rd.—J. LEWIS BONHOTE; Harrow, July 31, 1892.

*Somersetshire.*—I observed *C. edusa* on the railway banks in Somersetshire, while travelling down from Chester. *C. cardui* I saw several times, and *Vanessa atalanta* very plentifully, and occasionally *V. io*. — (Miss) E. CLARIBEL TOMLIN; Long Ashton Vicarage, Clifton, Aug. 13, 1892.

On the bank of the River Barle, near this town (Dulverton), I saw, a few days ago, a perfect specimen of *C. edusa* (male), but as I was fishing at the time, I much regretted being unable to capture it, though it allowed me to go close to examine it.—PHILIP DE LA GARDE; Dulverton, Somerset, Aug. 9, 1892.

*Surrey.*—*Colias edusa* is fairly common at Haslemere this year. The males are much more plentiful than the females, having been taken in the proportion of about five to one.—T. P. NEWMAN; Hazelhurst, Haslemere, Aug. 12, 1892.

On August 4th, I saw a male specimen of *Colias edusa*, which I failed to capture, near Oxted. In the neighbourhood of Purley I captured one



male on Aug. 5th, and two on Aug. 6th. — ALEX. DISTANT; Russell Hill, Purley, Surrey. The above note, written by my son, records the present abundance of *Colias edusa* in this neighbourhood. It was also moderately plentiful in early June, when he captured a fine female specimen. *P. cardui* has appeared in similar manner, plentiful then and abundant now, only that the present specimens are fresh and highly coloured, whilst the former were pale and worn, as might be expected. Amongst other insects which have been not uncommon in my garden, but not previously observed during my eight years' residence, may be mentioned *Arctia villica*, and the fine dragon-fly, *Æschna cyanea*, Müll. — W. L. DISTANT.

Four specimens of *C. edusa* seen on August 3rd in an old chalk pit on the Titsey Hills; one which I captured was in very good condition. — H. WILDE; Clay Hill House, Enfield.

*Sussex*. — I have already captured eighty-seven specimens of *C. edusa* on the downs here, including amongst fifty captured yesterday two splendid examples of the var. *helice*, in lovely condition, beautifully white, the orange blotch on the hind wing (smaller than usual) being the only orange or tint of that colour about them. In one the hind wings are very grey; in the other the fringes, antennæ, and thoracic crest are a lovely deep cherry colour. Amongst other things in butterflies, I have taken one female *Apatura iris* and two fine *Limenitis sibylla* at Polegate. — C. G. MORRIS; 4, Oriental Place, Brighton, Aug. 9, 1892.

*Colias edusa* and *Vanessa* (*Cynthia*) *cardui* simply swarm in the neighbourhood of Eastbourne. I heard of three var. *helice* being captured last week, and on Aug. 11th I took three myself at Beachy Head. I have not seen *C. hyale*. — W. W. ESAM; Upperton College, Eastbourne, August, 1892.

During August my brother Mr. Frederick Anderson captured seven beautiful specimens of *Colias edusa* var. *helice* in a clover field here. The insects vary from white to cream colour, the marginal spots differing in size like the typical female *edusa*. *C. edusa* first made its appearance here on May 28th, when a specimen was observed flying in the garden. During June the butterfly was frequently to be seen, the worn condition of all of them showing evidently that they were hibernated and migrants. The second brood appeared at the beginning of August, the specimens captured being in splendid order. I know it is thought by some that all freshly-emerged *edusa* have more or less a rosy flush on the hind wings. Having set from time to time a very large number of specimens, I am convinced this is not correct; out of a quantity captured during this month only one had the rosy glow. The insects differ much in depth of colour; some are bright orange, others inclining to yellow, and the marginal spots in the borders of the female also vary considerably in size. Six specimens of *Colias hyale* were taken in a clover field in the neighbourhood in August. This butterfly I have always found, even in the best *edusa* years, very rare in this locality. — JOSEPH ANDERSON, JUN.; Chichester.

*Colias edusa* seems to be very plentiful in this district; I counted twenty-five specimens to-day, of which I captured several. Of *Colias hyale*, I have only seen one (a male), which I took. *Macroglossa stellatarum* is also plentiful; I also took *M. bombylifformis*. I have not seen a single specimen of *Vanessa polychloros* all the summer. — L. S. GILES; Eartham, Chichester, Aug. 20, 1892.

Whilst collecting on the downs near Brighton, I captured a fine speci-

men of *C. edusa* var. *helice*, just emerged and drying its wings. — B. L. NUSSEY; Forest Gate, Essex, Aug. 17, 1892.

*Hampshire*.—It may be of interest to note that *C. edusa* made its appearance at Christchurch as early as the middle of July, and soon became extremely abundant; but during the first fortnight or three weeks the specimens consisted chiefly of males. Those friends who have been successful so far are, firstly, Mr. Brameld, who took a large number, including four of the well-known variety *helice*, on the cliff not far from High Cliff; Mr. Druitt found it very plentiful in meadows by the river, and captured six of the variety *helice*; whilst Mr. McRae and myself succeeded in taking an unusual number by the river in one morning (August 6th), finding the species in extraordinary profusion, unparalleled since the year 1877. We succeeded in capturing one fine specimen of *Colias hyale*, and missed two others; on the following morning I visited the same particular field, and managed to get another similar specimen of this latter in fine condition. I have never heard of this species occurring in Christchurch. I took rather a poor specimen on the cliff at Bournemouth in 1875.—J. M. ADYE; August 20, 1892.

During a week (Aug. 4th to 11th) in the New Forest, near Brockenhurst, we captured three males and eight females of *Colias edusa*; also one fair specimen of var. *helice*.—F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

*Colias edusa* is very common at Gosport. I have been out twice, and have captured over a hundred, including examples of the var. *helice*. —W. H. MACKETT; St. Matthew's School, Gosport, Aug. 5, 1892.

*Herefordshire*.—At Hereford, this year, one male *Colias edusa* was taken. —F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

*Yorkshire*.—Last Sunday (August 21st), when rambling near Aberford, Yorkshire, I captured a male of *Colias edusa* in splendid condition, and a gentleman from Idle, who was with me, also took one. Both specimens were beaten from a whitethorn hedge.—EDWARD SELF; The Gardens, Ferniehurst, Shipley, Yorkshire, Aug. 23, 1892.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 191.)

### *Phrygionis cæruleilinea*.

*Palindia cæruleilinea*, Walker, Lep. Het. xv. p. 1768 (1858).

Var. *Palindia lucia*, Bar. Ann. Ent. Soc. Fr. 1875, p. 300; pl. 5, fig. 7.

Espiritu Sancto and Rio Janeiro. In Coll. B. M.

*P. lucia* is the commoner form, in which the area enclosed by the first and second bands is not suffused with purple: it seems highly probable that *P. stella* and *P. corinna* are parallel forms of one species, since they differ precisely as *P. cæruleilinea*



does from *P. lucia*, only owing to the brighter ground colour the purple belt in *P. stella* becomes more prominent.

*Calydia bourgaulti*, Bar, is nearly related to *C. setosa*, Butl., but is brighter in colouring, and has cupreous instead of steel-blue metallic lines on primaries. *C. osseata*, Bar, is also near to *C. metalligera*, but is smaller and whitish; the smaller spots near the centre of the internal area of the primaries are apparently not shot with purple as in *C. metalligera*. and all the other markings are less pronounced. At the same time I think it probable that *C. metalligera* may be no more than a better-preserved and larger sample of Bar's species.\*

*Palindia micra*, Bar, *P. magdalensis*, Bar., *P. perlata*, Guen. (which is Walker's *P. spectabilis*), *P. mabis*, Guen., and *P. egista*, Bar, are all allied to *Dyomix*, both in pattern, in neuration, and their long upcurved acuminate palpi: in my opinion they should be referred to the Deltoids.

#### CATEPHIIDÆ.

##### *Cocytodes modesta*.

*Catocala modesta*, Van der Hoeven, Tijd. voor Natuurl. Geschied. 7, p. 282, pl. 7, figs. 8, 8 b (1840).

*Cocytodes granulata*?, Guenée, Noct. iii. p. 42, n. 1371 (1852).  
Java and Ceylon. In Coll. B. M.

The identity of M. Guenée's species with *C. modesta* of Java is not absolutely certain, as it is said to have a pupillated orbicular spot and the reniform spot clear. It comes from Central India, and, therefore, though clearly much nearer to *C. modesta* than to any other known form, may prove to be distinct, though probably not. *C. modesta* has been confounded with the following, owing to the imperfect references given by Guenée and later authors to Van der Hoeven's description, and the consequent difficulty of consulting it.

##### *Cocytodes polygrapha*.

*Arcte polygrapha*, Kollar, in Hügel's 'Kaschmir,' p. 478, n. 1 (1842-4).

*Cocytodes cærulea*, Walker (not Guenée), Lep. Het. xiii. p. 1123, n. 1 (1857).

North India. In Coll. B. M.

Although Walker's description agrees with Kollar's insect, the bulk of the specimens placed under the name *C. cærulea* in the collection are referable to that species.

\* In the Zeller collection I found both of my species of *Calydia* identified as Bar's *C. bourgaulti* and *osseata*. Of course it is possible that they may vary more than I supposed when I described them; but a good series would be necessary in order to establish this.

*ÆDIA, Hübn.*

*Anophia*, Guenée, is not distinguishable from this genus; in fact, the two species generically distinguished by European writers, though undoubtedly distinct, differ only a little more than the extreme varieties of some of the tropical forms of the genus. Under '*Anophia*' *olivescens* several distinct species have been confounded, and, at the same time, the examples with a nearly white patch on the primaries have been separated as *A. acronyctoides*, an allied, though distinct, Australian species.

*PREMUSIA, Walk.**Premusia intrahens.*

*Premusia intrahens*, Walker, Lep. Het. xv. p. 1780, n. 1 (1858).

*Anophia smaragdaria*, Walker, l. c., p. 1811 (1858).

*Dysedia zibellina*, Felder, Reise der Nov. Lep. iv. pl. cxii., fig. 8.

Sarawak. Types in Coll. B. M.

*ERYGIA, Guen.*

This genus comes nearest to *Mosara*, but differs in the simple antennæ of the males. The typical species is slightly variable, and the varieties form the types of several species, in addition to Walker's genus *Calicula*.

*Erygia apicalis.*

♂ *Erygia apicalis*, Guenée, Noct. iii. p. 50, n. 1381 (1852).

♀ *Calicula exempta*, Walker, Lep. Het. xv. p. 1808, n. 1 (1858).

♀ *C. squamiplena*, Walker, l. c., n. 2 (1858).

♀ *Dianthæcia geometroides*, Walker, l. c., Suppl. 3, p. 722 (1865).

♀ *Erygia usta*, Walker, l. c., p. 918 (1865).

Java, Moulmein, India, Japan, Australia. Types in Coll. B. M.

The types of *E. apicalis* and *usta* are from Java, collected by Horsfield; that of *C. exempta*, from Moulmein; that of *C. squamiplena*, from Moreton Bay; and that of *D. geometroides*, from Swan River. Walker wrongly described the last mentioned as a male.

*AUDEA, Walk.**Audea bipunctata.*

♂ *Audea bipunctata*, Walker, Lep. Het. xiii. p. 1135, n. 1 (1857).

♀ *Phoberia? fatua*, Felder, Reise der Nov. Lep. iv. pl. cxvi. fig. 1 (1875).

Natal. Type in Coll. B. M.



*Audea catocala.*

*Phoberia catocala*, Felder, Reise der Nov. Lep. iv. pl. cxvi. fig. 2 (1875).

Natal. In Coll. B. M.

It is simply extraordinary that Felder should have referred these two species to a genus of *Ophiuroidæ*, to which they bear no resemblance in any particular.

## CATOCALIDÆ.

In this family I am satisfied that too many species have been created; but perhaps with such attractive insects it is to a certain extent excusable. As there is, however, some difficulty in distinguishing between species and varieties (the latter being oftener far more distinct in appearance than the supposed species), I will not venture to do more than express my opinion as to the synonymy, leaving it to those who have bred them, or, at any rate, have dissected out the male genital organs, to set me right where I am in error. Some of the species appear to be distinguished by the colour of the wing-fringes alone, a character not always to be relied on, but which I shall, nevertheless, admit as a possible specific difference.

*Allotria.*

I am unable to separate *A. lineella*, Grote, from *A. amica*, Hübn. Hardly two examples of *A. amica* can be found which perfectly correspond in the lights and shades of the primaries, and our eighteen examples form a perfect transitional series from the lightest to the darkest type; in the defined markings the differences are only individual.

The genus *Zalissa*, Walk., belongs to the Agaristidæ, and supersedes *Seudyra*, Stretch. *Catocala albifascia*, Walk., from Burmah and N. China, belongs to this genus.

(To be continued.)

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

ELECTRICITY FOR ENTOMOLOGISTS.—As electricity is now coming into such general use, entomologists will be interested to know that they can easily have their moth-traps and lamps converted for the electric light at the Sherborne Electric Installation, under the superintendence of Mr. E. R. Dale, son of the late J. C. Dale, who has done so much to promote the use of electricity in Dorset and Wilts. We may mention that amongst the various collections of portable lamps, exhibited at the Sherborne and South of England Horse and Carriage Show, was one to fit on a strap, labelled

"County Police," which would also be useful to the entomologist, as the light can be switched on and off instantly. This appears to be the very thing for a sugaring expedition.—ED.

ON LOCAL LISTS.—The Rev. G. H. Raynor (*ante*, p. 195) expresses surprise that I have not advertised a request to be supplied with local lists of Lepidoptera. I considered the desirability of doing so, but came to the conclusion that it was not absolutely necessary, since, besides a vast amount of personal experience, and the enormous mass of information comprised in this and other magazines, I am, through the kindness of friends and correspondents, supplied with most of the published lists, and with others in MS. But I would not for a moment suggest that further information would not be desirable and welcome, and, if Mr. Raynor will furnish me with such a list of his own numerous captures, I shall feel greatly obliged to him: further, if, from this suggestion of his, collectors in other districts should be stirred up to contribute fresh and reliable material, I shall be equally thankful. There is one difficulty in asking for lists: it seems to include an obligation to accept them, faults and all. And nowhere does there seem to be a greater risk of error than in compiling a local list. Every species that somebody thought that he saw, and every one that has been wrongly named, is sure to creep in, and no one, except he has tried it, has any clear idea of the difficulty of sifting out the truth and avoiding the errors. The same may, of course, be said of magazine records; and here are materials close at hand for illustration:—On page 197 the capture of *Tapinostola extrema* in Staffordshire is recorded, without a word of confirmation, or even any indication that the (supposed) captor has any idea how improbable is the statement. *Tapinostola extrema* has been a lost species for thirty or forty years, and although it has, within the last three years, been rediscovered somewhere in the fen country, it is almost certainly confined to a small part of that district. But I am open to conviction, of course. If the moth is found to be *T. extrema* (*concolor*), it will add to our information. To take another case. In a paragraph at p. 196, quoted from the 'Field' newspaper, the writer states that fifty-one years ago he took, at Yaxley Fen, Huntingdonshire, "several fine examples of *Lycena dispar*, and the scarce copper *L. virgaureæ*." Here it is hardly possible to escape the impression that he mistook one of the sexes of *L. dispar* for *virgaureæ*; and this impression is strengthened when he goes on to say, after mentioning that he captured some rare moths, that "the food-plants of these rare British flies being extirpated, the flies themselves have all disappeared." The food-plants in question would be the great water-dock (*Rumex hydrolapathum*), the golden-rod (*Solidago virgaurea*), and probably the sallow, the sweet gale, the common reed, and the sedge (*Cladium mariscus*); and to say that these have been extirpated would draw some expressions of surprise from any botanist or entomologist. I do not point to these instances in a carping spirit, but only to suggest the desirability of accuracy in local lists and records.—CHAS. G. BARRETT; 39, Linden Grove, Nunhead.

VARIETIES OF EPINEPHELE HYPERANTHUS.—I obtained a few eggs from a fine but normally marked female *E. hyperanthus*, taken in the New Forest in July last year; they hatched in August, seven larvæ survived the winter, became pupæ by the end of June, and seven fine imagines emerged during July last, four males and three females. Three of them—two males

and one female—are very beautiful examples of the lanceolate var.; the males are exceptionally rich in colour, and the large lanceolate markings stand out in bold relief on the dark colouring of the under surface. The female is the grandest example I have seen, the largest marking measuring in diameter a quarter of an inch. The space in normal specimens between the second and third spots on the secondaries is in this individual occupied by a circular sprinkling of yellow scales forming an additional spot, thereby completing the band; the spots on the primaries are also connected. The specimen is a most striking and beautiful variety, the markings even surpassing in magnitude those of the exceptionally large female I captured in the Forest in 1890, which I then believed to be the finest lanceolate var.; but that specimen is now eclipsed by the example which emerged on the 13th July last. The two males emerged on the 5th and 6th respectively. All three have the markings on the upper side lanceolate in form and clearly defined. I think it must be an unusual thing to obtain three such rich vars. out of so small a number as seven specimens, and can only account for it by supposing that probably the markings of the male parent were of the same lanceolate type. — F. W. FROHAWK; 9, Dornton Road, Balham, S.W., August, 1892.

VARIETY OF *SESIA FORMICIFORMIS*.—I bred, on the 26th June last, a curious but beautiful var. of *S. formiciformis*. The usual deep red colouring of the species, viz., the apical portion of the wings and abdominal band being in this specimen replaced by a metallic bronze-gold, in no way approaching a red or orange, quite distinct in colour, and giving the insect a delicate, refined appearance. It is a male.—F. W. FROHAWK; August, 1892.

XANTHIC VARIETY OF *EUCHELIA JACOBÆÆ*.—A beautiful yellow, or, more correctly, dull orange, specimen of this moth was captured by my young friend and neighbour Edgar H. Purchase, in their garden on May 21st. From the limpness of the wings and perfect condition of the cilia, it had apparently only just left the pupa. It forms a good acquisition to my cabinet. It is a female, and I was almost inclined to try for eggs. Fearing, however, damage to the insect, I determined not to hazard the experiment. —JOSEPH ANDERSON, JUN.; Chichester.

*PSILURA MONACHA* var. *EREMITA*. Ochs.—Last year I received, through Mr. Edmunds, of Windsor, larvæ of *P. monacha* from Fontainebleau, and from these I bred several male specimens of the *eremita* form. With one or two exceptions, in which the hind wings were fuscous, all the female specimens reared from these larvæ were of the typical *monacha* form. A few males were intermediate between the type and var. *eremita*, and others were of the typical coloration, but the black waved lines on the middle third of the fore wing were more or less confluent. A number of ova were deposited in clusters about the cage in which the moths emerged, and from these I am now breeding imagines. So far the variation exhibited is exactly identical with that to which I have referred as occurring last year. The larvæ in 1891 were fed on apple and hawthorn principally, but oak was given occasionally; this year the larvæ were supplied with oak only.—RICHARD SOUTH; Aug. 20, 1892.

NOTE ON *CIDARIA SUFFUMATA*.—In my note on this species (Entom. xiv. 171-2), I mentioned that I had pupæ from three pairs of moths.



Unfortunately the majority of these pupæ failed to produce imagines; but the results, so far as they go, are satisfactory, and tend to prove that the "Dover form" of *C. suffumata* is as amenable to the law of hereditary transmission as are several other forms of species which I have reared at various times:—

1891.	1892.
A. Typical ♀ × typical ♂.	Result, 3 ♂ and 4 ♀ specimens of type form.
B. Black-banded silvery ♀ × typical ♂.	Result, 5 ♀ specimens type form, 2 ♀ of variety.
C. Typical ♀ × crippled typical ♂.	Result, 2 ♀ specimens type form.

I think there is little doubt that if a larger number of brood B had emerged, the proportion of specimens of the varietal form would have been greater.—  
RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W., June, 1892.

APORIA CRATÆGI. — In 'The Field' of June 25th, p. 949, an editorial note appears, in reply to a correspondent, as follows:—"No; the name of *Pieris cratægi* is not changed, and the butterfly was last year taken in limited numbers in North Kent, but is now very rare in England.—Ed." This note somewhat surprised me, as I was not aware that this species had been taken since Mr. Briggs's capture at Ramsgate, on June 9th, 1888. A note of mine therefore appeared on the subject in 'The Field' of July 9th, p. 17, asking for further information of the captures last year, and by whom they were seen, and if they were recorded. The following was the answer I received:—"We can assure our correspondent that a series of *Aporia cratægi* were taken in North Kent last year, and others left to continue their existence. We therefore cannot agree with his remark that the species is apparently extinct. For some years several entomologists rather readily jumped to the same conclusion, but the species reappeared.—Ed." The above cannot be considered in any way a satisfactory answer, and if *A. cratægi* was actually taken last year, as stated, why not record the fact by stating by whom the captures were made, with dates of capture, and a more precise locality, as North Kent embraces a considerable area of country, fully seventy miles in extent. Such a vague record is scientifically worthless. Why are entomologists often so reticent in the matter of localities? I do not imply that it is wisdom to make public the precise spot where a good thing can be taken, as it would speedily be a dealers' resort; but a district might be given in the case of important and interesting captures. The appearance of *A. cratægi* again in this country would be most interesting news to many, if not all. I hope therefore that some reliable information may come to hand respecting the reported captures made in North Kent in 1891.—F. W. FROHAWK; August, 1892.

OVA OF *SMERINTHUS POPULI* DEPOSITED IN CLUSTERS. — When at Barnes, on June 7th last, I found sixteen eggs, which have since produced larvæ of *Smerinthus populi*. The eggs were, however, neither green in colour nor deposited singly on the under side of a leaf, as is usual with this species. They were placed, evidently by a crippled female, in two groups on a brown dead twig, which had grown from the stem of a balsam poplar, and the eggs were, like the twig, brown in colour.—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, July 20th, 1892.

I found eighteen ova of *S. populi* on one small leaf. — J. LEWIS BONHOTE; Harrow, July 31, 1892.

**ASSEMBLING.** — During July I have tried “assembling” with several species of Macro-Lepidoptera, and have been successful with three, viz., *Porthesia similis*, *Odonestis potatoria*, and *Uropteryx sambucaria*. *P. similis*: I placed a female in our garden on the 19th—a cold, windy night—but did not get anything; on the 20th—another cold night—I took it to a small wood, and obtained one male, which made its appearance at 10.35. *O. potatoria*: A friend bred a female, and we took it out on the 15th and 16th, cold, damp nights; one male came on the first night at 9.40. I afterwards bred two females of this species, and took them out several nights, but they failed to attract the opposite sex. *U. sambucaria*: On 3rd and 4th—warm, bright, and windy nights—I placed a female in a sheltered spot in our garden, with the following results:—3rd, ten males, first at 10.15, last 10.45; 4th, four males, first at 10.10, last 10.35. There was a marked difference in the three insects in their manner of approaching the cage; *P. similis* immediately alighted on the gauze, and searched all over the cage for an entrance; *O. potatoria* dashed wildly around, sometimes knocking against the cage, but never settling on it; *U. sambucaria* came very slowly, and was very shy till it had been on the cage about a minute, when it could be easily boxed. — P. T. LATHY; Bexley Heath, Kent, August 11, 1892.

**ASSEMBLING OF MALES OF ACIDALIA BISETATA.** — On the evening of July 21st I noticed a number of small white moths hovering in a cluster over a leaf, and found that under the leaf were a pair of *Acidalia bisetata*, the moths round being eight or ten males of the same species. — R. M. PRIDEAUX; Clifton.

**CONFUSION BETWEEN LARVÆ OF DREPANA FALCULA AND D. SICULA.** — I should like just to draw attention to what may not be a universally known error in Newman's plate of the larvæ of Cuspidates. It is that the larva named “*Drepana sicula*” is evidently not that species, but is a woodcut of *D. falcula*. Having once seen the larvæ of both species, it would be impossible to confuse the two. — R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, Bristol, Aug. 7, 1892.

**LEPIDOPTERA IN THE BLACK FOREST, GERMANY.** — Whilst staying recently at Bad Boll, Bonndorf, Baden, towards the end of July, I noticed *Parnassius apollo* commonly close to the river, flying over rank vegetation and among willows at about 1800 feet above sea-level, also in open places in the fir-woods; some specimens had reddish orange spots instead of the usual crimson ones. I have never seen this species below 4500 feet in Switzerland. *Apatura iris*, common, and frequently found settling on wet places on the roads. In England *iris* is a difficult insect to capture, but this does not appear to be the case in the Black Forest, as I saw a boy catch several specimens with his hat. The following butterflies were abundant:—*Vanessa c-album*, *V. polychloros*, *V. atalanta*, *V. cardui*, *Colias hyale*, *Polyommatus virgaureæ*, *Lycæna corydon*, *L. damon*, *Melanargia galatea*, *Erebia ligea*, *Argynnis paphia*, *A. niobe*, *A. adippe*, *Melitæa didyma*, *Hesperia sylvanus*. Among the moths I observed *Sphinx pinastri*; a fine specimen of *Plusia bractea* came to light in the hotel, and many Noctuæ were buzzing about the rooms of an evening. Geometræ appeared to be plentiful. As I was intent on fishing and not on collecting insects, I did not make many captures of the latter. I may add that the hotel seems a

good one, and the charges very moderate. — J. H. LEECH ; 29, Hyde Park Gate, S.W., Aug. 20, 1892.

A DAY ON THE CUMBERLAND MOUNTAINS.—On the 21st June, the morning gave so much promise of a fine day that I decided to go up to my pet place on the mountains in search of *Erebia cassiope*. I set off on foot at 8.30 a.m., and commenced my nine miles' walk, six of which were amongst some of the most beautiful scenery in the Lake District, viz., along the eastern side of Lake Derwentwater, and through the Vale of Borrowdale, the remainder being mountain climbing. The sun was very bright, in an almost cloudless sky. The first insect picked up was *Iodis lactearia* ; further on I noticed one or two *Vanessa atalanta*, in fine condition, which I did not disturb ; next a nice lot of *Argynnis euphrosyne*, close to the roadside ; then a few *Scoparia basistrigalis* ; and observed that the oak trees here, as well as in the Great Wood, were stripped of their leaves by various larvæ. Toiling upwards, I now began to find the mountain species, but nothing worth taking until I reached the ground frequented by *Erebia cassiope*, at about 11.30, at an elevation of about 2200 ft. The first insect netted was a very good specimen of *Mixodia schulziana*, and, walking on a few yards, I took the first specimen of *E. cassiope*, which was rather rubbed ; then three others in quick succession, all rather rubbed. (I suspect the time between noon and 4.30 is the time for *cassiope* hatching out ; I got one, about 4.30, drying its wings.) After wandering about for some time, I took my first good specimen, and the fun began ; *E. cassiope* was on all sides, like black flakes, fluttering over the short grass, and now and then settling on a small flower, which grows amongst the grass, very low down, being in shape and size like the smaller flowers of wild strawberry, but of a bright yellow colour. I now darted about, netting and boxing as quickly as possible (for the clouds were gathering), several times two at once, with an occasional *C. furcatellus*, *C. pratellus*, a very good variety of (I think) *Melanippe fluctuata*, one *Emmelesia minorata*, and several *Nemeophila plantaginis*, a pair of the latter *in cop*. The sun was now greatly obscured, only shining a few minutes at a time, and I had to search very closely on the grass, and as that was rather slow work, and the afternoon nearly gone, I reluctantly commenced the descent, having in my boxes about eighty *cassiope*, mostly good specimens, besides about a score more insects of various species. As I got down to the lower slopes of the mountains, I took a miner's path, which ran for about two miles at an elevation of 300 or 400 ft. Here I filled up all my remaining boxes with a lot of *Micros*, including such species as *Crambus perlellus*, *C. hortuellus*, *C. pratellus*, *C. margaritellus*, *Ennychia cingulalis*, &c. I had just time to catch the omnibus which runs from Borrowdale Hotel to Keswick to take visitors to and from the station.—H. A. BEADLE ; 28, Lake Road, Keswick.

DEILEPHILA LIVORNICA IN THE NEW FOREST.—On June 4th, Mrs. Ward-Jackson caught a very fine specimen of this species in our garden at Lyndhurst in the New Forest. I understand that it is a rare moth in England. —W. R. WARD-JACKSON ; 7, Fig Tree Court, Temple, July 26, 1892.

[This species is certainly rare in Britain, but one or more specimens have been taken in this country nearly every year during the past quarter of a century. The years in which it does not appear to have been observed are 1874, 1876, 1881, 1882, 1885, 1886, 1889, and 1890. In 1868 over a score of specimens were recorded, and its range extended from Cornwall to York-



shire; six in 1883, and five in 1888. One specimen was captured in 1887 in the month of February, and examples have been taken in each month from May to September inclusive; but June and August appear to have been the best months. Three other captures are recorded for this year (Entom. 168-9).—ED.]

**PLUSIA MONETA AND CUCULLIA GNAPHALII AT TUNBRIDGE WELLS.**—I have much pleasure in announcing the capture of *Plusia moneta*, by myself, on the 13th of July, at Southborough. It is as perfect as if bred. I am in hopes of taking it again, there being plenty of its food-plant in the locality. In July, 1879, I captured, nearly at the same place, a lovely specimen of the rare *Cucullia gnaphalii*, which I now possess. Can you kindly inform me whether it has been taken during the last ten years? I have tried for it each year since, but have not seen another specimen, neither have I seen it mentioned at all in the 'Entomologist' during the same period.—MATTHEW M. PHIPPS; Southborough Brewery, Tunbridge Wells, August 11, 1892. [Larvæ of *C. gnaphalii* are found almost every year by those who are fortunate enough to know how, when, and where to search for them. They are very subject to the attacks of ichneumons, &c., and the percentage of imagines bred is often exceedingly low.—ED.]

**PLUSIA MONETA IN HANTS.**—I took a specimen of this moth at lamp-light in the house on the 12th July last.—S. G. REID; Froyle House, Alton.

**ABUNDANCE OF COLIAS.**—*Colias edusa* seems to be abundant and widely distributed this year. Early in the summer I saw single specimens at Deal and Darenth Wood, and two more at St. Leonards on August 30th. Along the Thames Valley, from Goring to Taplow (Aug. 12th and 13th, 1892), they were plentiful, five out of six that I took being males. Even in the London district they are about, one of six that I saw from the railway train between Taplow and London being just outside Paddington. One was seen in a garden at Stamford Hill the first week in August, and seven at Finchley. I have this morning returned from Lowestoft after a two days' visit. Walking through a lucerne field on Sunday afternoon, half a mile behind the town, I saw several *Colias hyale*. Of course, I had no net, but, having a box or two, succeeded in boxing three. Yesterday afternoon I went there again, and took eight more beauties, all quite fresh, and one of them as white as *P. rapæ*. *C. edusa* was very abundant in the same field, and I could easily have taken a hundred. Fifteen that I netted at random all proved to be males; and curiously enough, the only female I caught or noticed was a specimen of var. *helice*. This was slightly chipped, but otherwise good. The field in question was not more than half an acre in extent, but in a neighbouring field, four times the size, I only saw two *C. edusa* and no *C. hyale*. I was only just in time, as they are cutting the field to-day (Tuesday).—RUSSELL E. JAMES; Chesterville, Hornsey Lane, N., Aug. 23, 1892.

**ACHERONTIA ATROPOS AT CHICHESTER.**—A fine full-fed larva, which went into earth at once, was brought me on August 5th. It was found feeding on potato-leaves in a garden here.—JOSEPH ANDERSON, JUN. Chichester.

**DEIOPEIA PULCHELLA AT ST. LEONARDS.**—On May 28th last, in passing through a field at St. Leonards, I started and netted a splendid specimen

of *Deiopeia pulchella*. I searched the field, which was a very large one, thoroughly, and eventually captured another very transparent specimen, about 150 yards from where I had caught the first.—W. W. ESAM; Upperton College, Eastbourne, August, 1892.

DEIOPEIA PULCHELLA AT BRIGHTON.—A fine specimen of *Deiopeia pulchella* was captured on the barrack-walls last month by a street boy.—C. G. MORRIS; 4, Oriental Place, Brighton, Aug. 9, 1892.

LARVÆ OF VANESSA CARDUI AT CHESTER.—The numerous specimens of *V. cardui* I referred to in the 'Entomologist' for July have now larval representatives on the nettles in several of the country lanes near the city. This is the first time I have come across the larvæ in this district, and on previous occasions I have always found them upon thistles.—J. ARKLE; Chester.

LYCÆNA ARION IN SOUTH DEVON.—During the first half of July last, I had the pleasure of taking this butterfly in the neighbourhood of Selcombe. I explored a good deal of the coast in search of the species, and found it inclined to be very local, and not very abundant even where it occurred. It can hardly have been too late for the species, as out of about twenty-five specimens, which I managed to net, two-thirds were in very fair condition, and a few absolutely perfect. The riotous profusion of commoner butterflies about the coast here is a very pleasant sight, especially so to anyone accustomed to the Bristol neighbourhood. The most conspicuous species were perhaps *Argynnis aglaia*, *Satyrus semele*, *Vanessa urtica*, and (in places) *Lycæna ægon*, together with plenty of *Epinephele hyperanthes*, *E. tithonus*, *E. ianira*, *Pararge aegeria*, *Cænonympha pamphilus*, *Polyommatus phlœas*, *Hesperia sylvanus*, *H. linea*, and a few *Argynnis selene*, *Thecla rubi*, and *Lycæna alexis*. Hybernated specimens of *Vanessa cardui* and *V. atalanta* were to be seen; the first fresh specimen of the latter I netted on July 12th. Larvæ of both were very abundant. *Macroglossa stellatarum* was to be seen commonly at blossoms of *Centranthus ruber*; also seen to visit the red campion and *Calamintha clinopodium*. I did not get a glimpse of *Colias edusa*, but have met with one here to-day (7th August).—R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, Bristol, Aug. 7, 1892.

ANTICLEA RUBIDATA THE SECOND YEAR IN PUPA.—I bred several specimens of *Anticlea rubidata* during June from ova laid by a female captured in July, 1890.—JOSEPH ANDERSON, JUN.; Chichester.

APAMEA OPHIOGRAMMA AT ENFIELD.—In the year 1889 I captured, at Bush Hill Park, near Enfield, a moth which I was unable to name. But last week, on sending it to Mr. Cooke, he pronounced it to be a specimen of *Apamea ophiogramma*, which, as he says, "is now decidedly rare." It is a fair specimen, and was taken flying in the house, probably attracted by the light.—F. W. JONES; Harley Lodge, Enfield, Aug. 14, 1892.

ARGYNNIS PAPHIA, &C., NEAR BRECON.—On August 4th I captured twenty-two good specimens of *Argynnis paphia* in an opening of a pine-wood near Brecon. At the same place I also caught seven *Grapta c-album*, in good condition. The opening was one mass of thistles and brambles. I have also seen specimens of *Colias edusa* in this district.—ELDRED GORDON BROOKE; Gwenffrwd, Alexandra Road, Brecon, Aug. 6, 1892.

ABUNDANCE OF ARGYNNIS PAPHIA IN GLOUCESTERSHIRE.—On August 10th I found *A. paphia* swarming at Symonds Yat, Gloucestershire, but saw no specimens of *Colias edusa*.—H. WILDE; Enfield.

ABUNDANCE OF UROPTERYX SAMBUCARIA AND TIMANDRA AMATARIA.—These beautiful moths have been unusually common during July about the hedges in the neighbourhood of Chester.—J. ARKLE; Chester.

ABUNDANCE OF COSMIA PALEACEA (EUPERIA FULVAGO) IN SHERWOOD FOREST.—This year seems to have been specially favourable for the above insect. I have seen a good deal of Sherwood, having spent several holidays there, but have never before seen *fulvago* in such numbers. August 10th was our first night at sugaring; on that night I took thirty-five, the second night twenty, the third thirty, besides other species. Last year I sugared for the same moth, but as I was at Sherwood that year fourteen days later, I only took four *fulvago*. On the last night there were more moths than we could carry away, some of which are unknown to me. The locality is a good one for *Agriopsis aprilina*, but it is yet too early for them; I think they are still in the larva state. I may add that Sherwood Forest appears to be very poor in butterflies.—W. A. B. FERRIS; St. Matthew's Vicarage, Nottingham.

NOTES ON LEPIDOPTERA NEAR GLOUCESTER.—*Plusia gamma* has been as great a nuisance here as it seems to have been elsewhere. It began to disappear about June 20th, about which time *P. iota* almost took its place as regards numbers, occurring in hundreds at flowers at dusk, in beautiful condition. *Macroglossa stellatarum*, after many years' absence, has appeared here again, one being discovered by my wife in a flower-vase, and two more seen at flowers. This insect appears to be much more rare than formerly; twenty or twenty-five years ago, in Ireland, I remember it occurring in considerable numbers nearly every summer. One year it was particularly abundant; half a dozen could be seen at any hour of the day hovering over a strong-smelling blue flower, the name of which I forget. *Vanessa cardui* has also been more abundant than usual here this summer, a day seldom passing without several been seen. *V. c-album* is just beginning to appear. *V. polychloros*, one only, on July 14th. On August 18th, at verbenas, I captured a male *Celena haworthii*; and on the 20th, at light, another, also a male; both newly emerged. There is no cotton-grass within a mile and a half, and, where it does occur, is very scanty; certainly not more than twenty tufts could be picked in the spot where it occurs. Is there any other food-plant known, and is the insect of frequent occurrence in Gloucestershire? These are the first I have seen here; and I can find no note of it having been taken in this county.—N. F. SEARANCEKE; Mitcheldean, near Gloucester, August 19, 1892.

CAPTURES IN THE CHELTENHAM DISTRICT.—The following is a list of the rarer Lepidoptera that have been caught during the past term in and about Cheltenham, by the boys of Cheltenham College. Many more specimens have been taken, but only the first capture is noted. A prize is awarded to the boy who obtains the most "notices." An entomological section has been instituted at the College, and the boys take a keen interest in the study:—May 20th, *Notodonta dictæa* (male), College ground, by W. F. Buckle; 21st, *N. dictæa* (female), College ground, by Fowler; *Acronycta alni*, College ground, by E. A. Sanders; 29th, *Vanessa cardui*,



Cheltenham woodlands, by Sagar-Musgrave. June 1st, *Smerinthus populi* and *S. tilie*, College ground, by Sagar-Musgrave; *Sphinx ligustri*, Christchurch Road, by E. A. Sanders; 6th, *Chærocampa elpenor*, Charlton Kings, by Bagnall; 9th, *Colias edusa*, Railway bank, by E. A. Sanders. July 3rd, *Macroglossa stellatarum*, Leckhampton Hill, by Goodlake; 5th, *Grapta c-album*, Hatherley Wood, by E. A. Sanders; 20th, *Macroglossa stellatarum*, Christchurch Road, by E. A. Sanders.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, July 24, 1892.

[Entomology flourishes in most, if not all, of our Public Schools, and we are glad to find that the boys of Cheltenham College are exhibiting such active and intelligent interest in the Lepidoptera of their district. It is to be hoped that other orders of the Insecta also receive a share of their attention.—ED.]

CAPTURES AT HEREFORD.—At Hereford, this year, *Vanessa c-album* is common as usual. Amongst other butterflies caught here are *Thecla w-album*, *Argynnis paphia*, and *A. adippe*; and, among the moths, one *Geometra papilionaria*, &c.—F. L. BLATHWAYT.

SIREX GIGAS IN SHROPSHIRE.—A fine female specimen of this sawfly was brought to me, July 13th, from the yard of a saw-mill at Ellesmere, Shropshire, where the insect had not been observed for over twenty years.—J. ARKLE; Chester.

ERRATUM. — Page 199, line 18 from top, for *Nonagria typhæ* read *Macrogaster arundinis*.

## SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 28th, 1892.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Frohawk exhibited seven specimens of *Epinephele hyperanthes*, L., bred from ova. The female parent, taken in the New Forest, was of the ordinary form; possibly the male was of the lanceolate form, as of the seven specimens bred no less than three were of this variety; a variety of *Sesia formiciformis*, Esp., having the usual red colour replaced by burnished gold; living pupæ of *Colias edusa*, Fb., *Vanessa cardui*, L., and *V. atalanta*, L. Mr. Frohawk stated he had obtained seventy pupæ of *Colias edusa*, the ova having been obtained from two females taken in the spring; he also remarked on the abundance of *Vanessa atalanta*. Mr. Rice exhibited, on behalf of Mr. Hickling, lepidopterous ova on stems of asparagus, for naming; and Mr. J. W. Hall suggested that probably they were *Triphana pronuba*. Mr. South exhibited specimens of *Zygana trifolii*, Esp., selected from a number taken in Middlesex, showing great variation in the size and colour of the spots, in the colour of the hind wings, and in the width of the border of the hind wings; Mr. South stated that the series exhibited represented all the known phases of variation in this species. He also exhibited *Asthena blomeri*, Curt., taken in Buckinghamshire, and made remarks thereon. Mr. C. G. Barrett, *Vanessa c-album*, L., and pointed out differences between the first and second broods; a discussion ensued, the general opinion being that the species was certainly double-brooded. Mr. Frohawk remarked that he had recently been to the New Forest, and, although the weather was bad, he took three white-spotted specimens of

*Argynnis paphia*; the variety *valesina* was fairly common, and *Limenitis sibylla* exceedingly so, and very late in its appearance.

August 11th.—The President in the chair. Mr. West (Streatham) exhibited a series of *Apamea ophiogramma*, Esp., and *Eupithecia succenturiata*, L. Mr. Barrett remarked that the former species was very dark, and one specimen unusually so. Mr. J. A. Cooper said *A. ophiogramma* was frequently taken at Chingford. Mr. Russell, a handsome specimen of *Pieris napi*, L., from Woking, the upper wings being strongly suffused with black, and the spots unusually large. Mr. Barrett said the specimen was much more strongly marked than those from the North of Ireland. Mr. Russell also exhibited a series of varieties of *Epinephele ianira*, L., males and females, from Abbott's Wood: one male showed the orange-coloured blotch, in imitation of that of the female, which Mr. Barrett observed was the form found in the more northern and western range of the species. Mr. H. Moore exhibited three species of Orthoptera from the Amatola Mountains, South Africa, viz., *Platypleura divisa*, Germ., a pretty cicada with moth-like coloration and markings; *Phylloptera prasinata*, Stal., a green tree-cricket: and *Ædipoda pictus*, a grasshopper showing considerable variation in the density of the colouring of the hind wings, the specimen shown having a faint tinge of yellow, whilst in others it is developed into opacity. Mr. Short referred to the exhibit made by Mr. Rice, at the previous meeting, of ova deposited on asparagus, and, in supporting Mr. J. W. Hall's identification, showed ova of *Triphæna pronuba*, L., on rush. Mr. Hawes exhibited a larva of what he originally thought to be *Hesperia comma*, L., but remarked that its lateness in that stage had made him feel doubtful as to its identity, and he was now satisfied that it was *Nisonaides tages*, L.; a discussion ensued, in which it was pointed out by Mr. Frohawk that the larva of *comma* was distinguishable from *tages* by the white markings on the tenth and eleventh segments, and which were to be found on the under side. Mr. Hawes also called attention to the tendency to lightness in colour in many species of butterflies during the present season, and gave as instances the extra brilliancy of the blue in males of the second brood of *Lycæna icarus*, and the large proportion of the females of that species which were blue; a discussion took place, in which Messrs. Carpenter, Frohawk, Barrett, Hawes, and Carrington took part. The President read a letter from Mr. J. Jäger, in which he reported the capture of *Callimorpha hera*, L., from South Devon on the 6th inst., and stated that as there were still a number of unbelievers regarding the genuineness of this beautiful moth, he felt it necessary to again come forward in its defence, as he felt sure that anyone who knew the country, intersected as it was by wooded mountains and tracts of marsh-land, would, he was sure, never favour the theory that it had been artificially planted there.—H. W. BARKER and A. SHORT, Hon. Secs.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—August 8th, 1892.—Mr. R. C. Bradley in the chair. Mr. G. W. Wynn showed a boxful of moths taken on sugar during two nights at Wyre Forest, including a nice row of *Aplecta tineta*; also *Cossus ligniperda*, *Cymatophora* or, &c. Mr. C. J. Wainwright, a nice series of *Xylota sylvarum* from Wyre Forest, forms of *Amphidasys betularia*, intermediate between the type and *doubledayaria*, &c. Mr. A. Johnson, series of *Charocampa elpenor*, *Sphinx ligustri*, &c.; and some varieties of *Arctia caia* from larvæ fed on lettuce.—COLBRAN J. WAINWRIGHT, Hon. Sec.

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## LIFE-HISTORY OF *CARTEROCEPHALUS PALÆMON*.

By F. W. FROHAWK, F.E.S.

IN June, 1891, I received some living females of *C. palæmon* from the Rev. J. A. Mackonochie, who most kindly captured them expressly for me, my friend Mr. G. Bryant having informed him I was desirous of working out the life-history of this species; it is therefore through the kindness of both gentlemen I was enabled to carry out my wish, and so became acquainted with the complete history of *C. palæmon*, from the depositing of the egg to the emergence of the imago, which I will now proceed to give in detail.

Upon receiving the living females, I at once placed them on a growing plant of grass, *Bromus asper*, and soon had the pleasure of seeing a few eggs deposited, some upon the blades of grass, others upon the gauze-covered glass jar in which the plant was placed; they were laid singly, firmly adhering to whatever laid upon. The first lot of eggs were deposited on the 14th June.

The ovum is one-thirty-second of an inch wide, being about one-fifth wider than high, of a somewhat compressed conical form, bulging a little below the middle, and becoming less in size on nearing the base, which is rounded at the edge; the base itself is slightly concave; the crown is rounded; the operculum is small and rather sunken, and very finely punctured; the entire surface is smooth, showing only faint granulations and mere indications of striations on the lower half, running from the middle to almost the base. It has a pearly appearance, being whitish or yellowish white in colour, with opaline reflections; shortly before hatching the colouring becomes opaque, and a dark leaden spot appears at the crown, which is caused by the dark head of the larva showing through the shell. In ten days after the egg is deposited the young larva emerges by eating away the crown. The first egg hatched on June 24th.

Directly after emergence the larva is one-twelfth of an inch



long; the head is large, intensely black and shining; the body is cylindrical, of a creamy white colour, including the legs and claspers, and of a rough or velvety texture; on the first segment, encircling the upper half, is a black crescentic collar; there are six longitudinal series of short fine bristles, three on either side. The larva, soon after emerging, commences making for itself a little tubular dwelling, drawing together the edges of the grass-blade by spinning about three or four stout cords of silk, each cord composed of a great number of strands, which quickly contract, causing the edges to draw together and sometimes to overlap, forming a compact short tube; generally before spinning it nibbles off the extreme edge of the blade where the silk is afterwards attached to. It feeds upon the blade both above and below its abode, devouring so much that frequently only the midrib of the blade remains, and the tube only just long enough to conceal it; it then shifts its quarters, and prepares a new home. It is particularly active; upon the slightest touch it rapidly runs out of its tube, either backwards or forwards, and, after remaining for a time until all apparent danger has passed, it retreats into its abode.

The subsequent descriptions refer to the same specimen through all stages, so that the exact period from one stage to another may be given.

After the first moult, which occurred on July 8th, the larva is nearly a quarter of an inch long; the body is cylindrical and slender, without markings; the segments are well defined and transversely wrinkled; it is clothed with very short and fine hairs, most minute, giving the surface a velvety appearance; the colour is of a very pale yellowish green, in certain lights appearing of a whitish green; the head is large, elongated, and flattened above, black and shining, as also is the collar on first segment.

Second moult on 17th July. It then measures seventeen-twentieths of an inch in length; colour very pale green, with a fine longitudinal medio-dorsal line of a darker green, and a sub-dorsal green line, slightly darker than the ground colour; each line is bordered by a paler stripe; the head is black, and mottled with pale brownish grey occupying the centre of each lobe, and a blotch above the mouth; there are five glistening black warts, set on a glazed collar of pale green, encircling the upper half of first segment; the central wart is largest; on the last segment is an elongated oval black mark narrowed in the centre. On July 24th, being thirty days old and still after second moult, it was exactly half an inch long, one-tenth of an inch in diameter, and perfectly cylindrical throughout.

Third moult on July 30th. Seven days after third moult, forty-four days old, it measured seven-tenths of an inch long; the body of the same shape as previous stage; colour pale

whitish green; a longitudinal medio-dorsal line rather dark green, which is bordered on each side by an almost white, very fine line, followed by alternate darker and lighter lines, the lightest being extremely fine; then a subdorsal darker green line, bordered laterally by a conspicuous whitish line, which is again bordered below by a paler and indistinct green line, and a very faint spiracular whitish stripe, on which the spiracles are placed; they are white, outlined by a dark but indistinct ring; the under surface is whitish green; the head is about the same width as the body, rather depressed, and of a pale greenish grey colour with black markings, one central between the lobes, and one down the middle of each lobe, the central one bifurcating and uniting the others in front; the eye-spots are black; both the head and body are clothed with very short stiff hair; the anal segment is elongated, porrected, and flattened, overlapping the hind claspers; the central black marking previously mentioned is in this stage very conspicuous; the legs are dark grey, with whitish extremities; the claspers the same colour as the under surface; the segments are transversely wrinkled.

Fourth moult, and last, took place on 17th August, or possibly early on the 18th, as on that morning I found its cast head-skin lying below the tube in which it moulted. About four p.m. that day I expelled it from the tube by gently touching its head, when it instantly ran out backwards. I then had a good view of it, and took its portrait; it remained motionless for a long time. The colour was then of a clear pale whitish green; at each segmental division the skin is loosely wrinkled, each fold or wrinkle being pale yellowish white, especially noticeable between the first six or seven segments; the remainder are fairly uniform in colour; each segment is delicately wrinkled transversely, in addition to the divisional folds mentioned. In this moult a great and important change takes place, *i. e.*, in the colouring of the head, and the disappearance of the ovate black blotch on the last segment, which is so conspicuous in the former stage, and the black warts and collar on first segment.

The head is now entirely of a pale whitish green, with a faint bluish tinge, excepting an extremely fine central black line separating the lobes of the crown, and there are about six tiny black warts in the region of the eye; four are in the form of a crescent, the two lowest are the most conspicuous and bead-like; on each segment are a few exceedingly small black specks, only just visible by the aid of a strong lens; the most distinct are those forming a double longitudinal dorsal series, two in the middle of each segment; these appear concaved and very metallic, reflecting a high light; the markings appear precisely similar to those in the previous stage; the legs, claspers, and under surface are uniformly pale green in colour; below the spiracles the body

is dilated, making the under surface flat and rather concave. The head is large, fully one-twelfth of an inch in length, and broad in proportion; it is porrected and slightly compressed on the crown; the body is about the same width as the head, and of equal thickness throughout; the anal flap is of the same form as before moulting; both the head and body are clothed with short fine hair; the surface of the head is finely granulated. Upon measuring the larva, I found it had decreased in length by one-twentieth of an inch, but was stouter in proportion. On the 12th September it had considerably increased in length, then measuring fifteen-sixteenths of an inch, and the colour had changed to a clear yellowish green, but still pale; in other respects it was the same as described. If touched when resting in an extended position, it immediately contracts itself, making it much less in length.

(To be continued.)

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## ON THE BORDERS OF DARTMOOR.

By MAJOR JOHN N. STILL, F.E.S.

BAD as is the character of Devon, and of Dartmoor in particular, for rain, we have no cause to grumble this summer; the fine weather which commenced in May continued with few breaks to within a week of September, affording the entomologist every chance of following his favourite pursuit, and finding insects generally more plentiful. The year 1892 will long be remembered in the entomological world as a great "*edusa* year." In this county the insect could be seen in vast numbers, particularly along the coast; but far inland every garden and field seemed to contain *C. edusa*, with an occasional var. *helice*; they even penetrated into the streets of our towns.

It is many years since I remember seeing so many butterflies; the various species seemed to be early, to overlap each other, and to remain long in fine condition. It was not unusual to see seven or eight kinds together on the flower-heads of *Eupatorium cannabinum*, whilst the sheltered flowery spaces of our great woods exhibited a moving mass of insect life. *Melitæa athalia* appeared in June in those portions of the wood where, amongst underwood of two years' growth, foxgloves abounded; and high up on the moor, confined to a very small area, *Melanippe tristata* was numerous. On the grassy slopes the pretty *Pyrausta ostrinalis*, *Xanthosetia hamana*, and *X. zoegana* could be taken in plenty; and amongst the bracken of its moorland home the chimney sweep (*Tanagra atrata* = *chærophyllata*) swarmed. *Nemeophila russula* could be found at the same time and place, the male far outnumbering the female. On the trunks of the fir trees *Tephrosia*



*crepuscularia* var. *bundularia*, *Macaria liturata*, and *Bromolocha fontis* were numerous, the latter extremely shy, and most difficult to net when on the wing. The oak woods yielded *Hylophila prasinana*, *Lithosia mesomella*, *Gnophria rubricollis*, *Tephrosia luridata*=*extersaria*, *Geometra papilionaria*, *Eurymene dolobraria*, *Ephyra punctaria*, *Melanthia albicillata*, *Asthena sylvata*, *Erastria fasciana*, *Eupisteria oblitterata*, and *Diphthera orion*.

The males of *Bombyx quercus* and *Odonestis potatoria* were very plentiful, the latter quite a pest at light. The handsome scarlet tiger (*Callimorpha dominula*) and *Spilosoma fuliginosa* were by no means scarce, flying in the midday sun in the open glades of the woods. At dusk I took *Emmelesia affinitata* in plenty, *Anticlea rubidata*, the very local *A. sinuata*, *Aplecta herbida*, *Ceropacha duplaris*, and in low damp situations many specimens of *Perinephele lancealis*. Light and other attractions gave me *Pterostoma palpina*, some extremely dark *Rusina tenebrosa*, *Noctua brunnea*, *Agrotis strigula*, *Hydroecia micacea*, *Neuronina popularis*, *Luperina cespitis*, *Stilbia anomala*, *Polia chi*, *Gnophos obscuraria*, *Melanippe unangulata*, and many fine forms of the pretty *Cidaria silaceata*. In its restricted range on the coast *Aspilates ochrearia* was to be found by day.

Light seems to have the greatest possible attraction for *Neuronina popularis* and *Luperina cespitis*, both insects coming early, just after dusk, the former in immense numbers, threatening to extinguish the lamp itself. I had no difficulty in taking nearly 400 in a very few evenings; out of this number there was but one female. What becomes of this sex? Why should light fail to attract the female as well as the male? *L. cespitis* of course is never so plentiful. I have on all occasions, and in localities far apart, taken these two species together; their habits and behaviour on arrival are, however, utterly different; *N. popularis* flies madly round and round the lamp, but its flight ceases about ten o'clock; whilst *L. cespitis* arrives singly, and at once settles, but continues its visits far into the night. One good *Tortrix* fell to my lot, viz., *T. cratægana*; and among the many species of small fry I may mention *Elachista cygnipennella*, and several vars. of *Peronea tristana*.

Throughout the season the larvæ of many species have been plentiful, the best of my captures perhaps being *Asphalia ridens*, *Amphidasys strataria*, *Numeria pulveraria*, *Notodonta chaonia*, *N. trepida*, *N. dromedarius*, *Dicranura furcula*, and *D. bifida*; and by paying attention to the large quantities of alder which grow in this neighbourhood, I secured many of the lovely larvæ of *Acronycta leporina*, including a few of the black variety, and also *Eupisteria oblitterata*.

On *Chrysanthemum inodorum*, var. *maritimum*, the larvæ of *Cucullia chamomillæ* were not uncommon. Newman, in his 'British Moths,' p. 445, and some other authors, give the

different species of bramble as the food-plant of *Erastria fasciana* = *juscula*. This seems an error, the larvæ having been found feeding on *Molinia cærulea*. Mr. Bignell informs me that he has always taken it on this grass. The larvæ of many of the *Eupithecia* have been exceedingly abundant.

Sugar and light have both been more than usually attractive; day work and dusking have also produced good results. Therefore, taking into account the abundance of both imagos and larvæ, the season, now alas! almost over, has been one the like of which we may not soon see again.

Horrabridge, S. Devon, Sept. 12, 1892.

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## THE MUSTARD BEETLE (*PHÆDON COCHLEARIÆ*).

By FRED. ENOCK, F.L.S., F.E.S.

No doubt most of the readers of the 'Entomologist' are acquainted with this common insect, but there may be many who do not know that *Phædon cochleariæ* (or *Phædon betulæ*, as some term it) is "*The Mustard Beetle*," one of the greatest crop pests we have in England; and though it has been known for quite fifty years, it still goes on increasing and appearing in the mustard-growing districts with the greatest regularity; and almost as regularly as the growers put in their seed, so does this beautiful blue beetle put in its appearance, and in many cases *utterly* ruins the whole crop, an additional loss being added by the expense of having it all ploughed in.

Now, one naturally asks, Cannot something be done to prevent or lessen the ravages of this insect pest? Like the greater number of "crop pests," the life-history of this beetle is but imperfectly known, though the reports of their appearance have been most regular from various correspondents; but as such cannot convey to your readers the slightest idea of the swarms of the Mustard Beetle, I purpose giving a short account of my "experience" in the fields around Littleport and Ely, the same neighbourhood where, in 1854, these beetles were noticed attacking the mustard. This has generally been looked upon as the *first* authentic account, but that most practical of field entomologists, John Curtis, has a note in his 'Farm Insects,' p. 96, of its appearance in 1841, for there is no doubt that the "small black larva," which Mr. Parsons mentions as having attacked both white and brown mustard was the larva of this identical Mustard Beetle.

During the first week in June I received intimation that the Mustard Beetle was plentiful, and spreading over the fields. I lost no time in going down to examine them myself, matters being made much easier and time saved by the kindness of Mr.

Luddington, who drove me over to a field of brown mustard, where the beetles were very plentiful on nearly every plant, all busily engaged in finding partners to keep up the family name, and, from the number noticed pairing off, there was every prospect of a large progeny.

This brown mustard was from two to three feet high, and too tall to do much work in, so we drove off for six or seven miles along one of those straight level roads, bounded on each side by hedgeless fields, the black soil of which reminded us that it was not many years ago when it was all fen-land; and though we had come with the intention of examining this crop pest, our thoughts and conversation often turned to those grandest of British butterflies, the Swallow-tail and Large copper, both of which *used* to be seen in these parts. *P. machaon* can still be found in the right locality, but *P. dispar* is an insect of the past.

Passing over into the borders of Suffolk, we pulled up at a field of white mustard, jumped the dyke, and landed safely on the other side, where I was almost staggered with the sight which presented itself to my eyes. The mustard was from nine inches to a foot in height, and *every* plant was absolutely *swarming* with the Mustard Beetles. I had my ordinary bag-net with me; this I held on one side of a drill whilst Mr. Luddington shook the plants, the beetles pouring off into the net by hundreds, so that in a very short time their weight was quite perceptible, necessitating transfer to a tin canister. A glance around and up the drills showed that *every* plant was swarming with beetles, which looked very beautiful as the sun shone upon their lovely blue elytra; but their work on the mustard was only too evident that this vast army in this field of six or seven acres required feeding, and, like a hostile enemy, everyone was for himself, and the beetles did not intend to starve as long as there was a green leaf left; and to insure complete destruction of the crop, the females were busily occupied laying their eggs on almost every leaf, and many tiny larvæ or maggots were already hatched, and rapidly reducing some plants to a mere skeleton.

We beat one drill for a distance of seventy yards, which occupied just fifteen minutes; the beetles I most carefully boxed and counted out at home the next day, and found that there were *over fifteen thousand* from this fifteen minutes' beating!

I pulled up several plants for the purpose of examination at leisure, and for making drawings, &c. I commenced counting the eggs on *one* plant, taking each leaf separately. These eggs are laid on the under side, alongside the mid- and cross-ribs. The female first scrapes out a small channel half-way through the cuticle, into which cavity she places an egg, so that it is embedded and protected from harm when the plants are blown about.

The top leaf had 85 eggs; the middle ones from 150 to over 500; whilst on one of the lower ones were no less than over 700



eggs! I must confess that I was glad when I reached the 35th and last leaf, and found that on this *one* plant alone there were no less than 9234 eggs laid! and this was not a special plant, for all examined appeared to be covered; and what the field looked like a month later I much regret that I cannot say, as I was prevented visiting it after June 11th, when Mr. Charles Waterhouse and I went down and found both beetles and larvæ hard at work reducing the mustard plants to bare skeletons. The beetles were not so plentiful, as no doubt most had played their part, laid their eggs, and died.

We were particularly struck with the great number of Diamond-back moths (*Plutella cruciferarum*) which flew up at every step. The mustard plants were *alive* with the larvæ of *this* pest, as well as those of the Mustard Beetle.

As I have been engaged for some years studying Economic Entomology as applied to Agriculture, I think I may venture to offer a few suggestions, in the hope that they may be useful to help check the advance of these "crop pests," for if mustard is worth ten pounds per acre, surely it is worth while trying to save from the throats of these busy beetles.

Watching these beetles time after time, feeding by thousands, or, I might say, *millions*, I cannot come to any other conclusion but that much might be done *if* growers of mustard, &c., would see the use of the sweeping or beating net, and impart that knowledge to their *employés*, that it would be possible to perceptibly diminish the vast army of this crop pest, as well as the Diamond-back moth; in fact, it is on record that a German *did* adopt such practical means to rid his fields of the Mustard Beetle, with the result that he saved his crop; but this plan, like everything else, ought to be done carefully, and at the *right* time. There is not the slightest difficulty to contend with as to the activity of the beetle, which is one of the *laziest* and most timid of creatures; and though having wings, it seldom uses them, but at the slightest shake of the beating-stick they drop down instantly, feigning death, and nothing could be easier to carry out than this simple plan of beating.

We must bear in mind that the growers want some *cheap* and easily applied remedy, which would not be too great a strain on their pockets, or the mental capacities of their *employés*.

It is *most* important that we should know the life-history of these crop pests from actual personal observation, so that, like an experienced general, we may know their hiding place at any time, to enable us to circumvent them. A few years, if needs be, spent in proving one *fact* in the economy of an insect is time well spent, rather than to go on for fifty years on an unproved statement.

During last winter I had the pleasure of regularly meeting a number of those engaged in farming and floriculture, most of

whom were anxious to know more of the insects whose ravages were so familiar to them; and no doubt in years to come, when old prejudices have died out, the coming generation of those engaged in tilling the soil will see the importance, profit, and pleasure of an acquaintance of their insect foes and friends.

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APORIA CRATÆGI IN ENGLAND.

By C. A. BRIGGS, F.E.S.

I QUITE agree with Mr. Frohawk's remarks (Entom. 217) as to the very unsatisfactory character of the so-called records of the recent captures of this species in Kent. Neither Mr. Carrington (in the 'Field') nor Mr. Webb ('Brit. Naturalist,' ii. 150) state that they have seen any of the specimens they mention, nor give the name or names of the alleged captor or captors to enable other entomologists to form their own opinions as to his or their *bona fides* or reliability. The exact place of capture is a matter of minor importance, and for obvious reasons cannot always be given; but the captor's name is, in these days, unfortunately, an essential. The natural result of such mysterious reticence is to open the way to fraud. We shall, doubtless, soon have specimens offered for sale or exchange purporting to be the genuine North Kent and Sandwich specimens, "vouched for" by Messrs. Carrington and Webb; and, while the captor's name is withheld, such specimens cannot be checked or verified.

With a species that seems to be dying out with us, we cannot be too careful not to admit imperfectly authenticated records; and, for my own part, I do not consider these as records at all. Mr. Webb not only seems to be of the same opinion, but to have some private system of recording of his own, for he says that records need not be made in one or all of the entomological magazines to be received and quoted afterwards as an authority; but I trust that these views will not be adopted by many, for such publication and concealment joined are useless. No doubt many valuable facts are stored away and practically lost in the 'Proceedings' of our minor provincial Natural History Societies and in local newspapers; but whether either of these unfortunate methods have been adopted for the full record that Mr. Webb implies has been made of these captures is still a mystery, and the fact remains that the last open, candid record, without suppression of salient facts, is that of the specimens captured by my nephew in 1888. Messrs. Carrington and Webb have, no doubt, satisfied themselves of its more recent capture; but I certainly claim the right of knowing the grounds on which their judgment is formed before I form my own.

The question of the gradual extinction has for some years

been much discussed in our entomological journals, but it was last raised by Mr. Hodgkinson ('Record,' iii. 85) asking whether the species had *occurred* again. Mr. Tutt, in a note, replied:—"The last record should be well known to Mr. Hodgkinson. It is in the E. M. M. vol. xxiv. p. 131, and is vouched for by Mr. Webb. Mr. Edmonds has sold a large number of pupæ of late, but no one supposes they are of British origin." This refers to the 1887 captures; and if, as Mr. Webb tells us, Mr. Tutt was perfectly conversant with the fact of their annual occurrence at Sandwich (*i. e.*, in 1888—89—90—91), it appears a strange answer to Mr. Hodgkinson's plain question, which related *not* to the record, but to the occurrence, of the species. Probably, however, Mr. Tutt agreed with my opinion, that this emasculated record was not sufficient to enable it to be quoted, and, therefore, very properly ignored it.

55, Lincoln's Inn Fields, Sept. 16, 1892.

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## ON BREEDING *PARNASSIUS DELIUS*.

BY LEONARD S. SELLON.

THIS year I have been fairly successful in rearing *P. delius* from larvæ, and venture to give the following account of my experiences.

I obtained sixty-two larvæ in May by searching the food-plant (*Saxifraga aizoides*) at an altitude of about 5200 feet. These were of all sizes, some nearly full-fed, others quite small. The first larva I obtained on May 17th, and it was then about half-grown; but some taken at the same altitude much later were still quite small. On the 24th of June I took six more larvæ at 6500 feet. These were also of various sizes.

These sixty-eight larvæ (with the exception of half a dozen, which I preserved) I fed on the growing plant of *Saxifraga aizoides*, and they all turned to pupæ, with the exception of four or five, which escaped from the cages. The food-plant grows in exceedingly moist situations, in fact often in the water; and I therefore kept the plants on which my larvæ were feeding very moist, by watering the whole cage, plant, larvæ, and all, very freely, at least twice a day.

The first larva *spun up*, among the food-plant, about the end of May. The cocoon is very slight, and the pupa can easily be seen through it.

The first imagines appeared on July 6th (one male and one female), and others followed through July until the 29th; after which date there were no more emergences until August 19th, when one male appeared. Altogether forty-two imagines were bred, of which twenty-four were males and eighteen females.



The following is a description of the larva:—Velvety, shining black, except between the segments. The head and legs are also dull black, without lustre. There is a conspicuous side line of spots, which in some specimens are orange, and in others lemon-yellow; on each segment there are three of these spots of different sizes, the middle one being the smallest, and the last much the largest. Above these spots on each segment are two very small shining dots of a bluish colour, the first of which is situated somewhat higher on the back than the other; also below the spots there is a similar dot, between the first and second spot.

The larva, as might be expected, is smaller than that of *P. apollo*.

The pupa has the same appearance as that of *apollo*, and has also a purple efflorescence, but is smaller.

Davos-Dörfli.

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## OBSERVATIONS ON *HESPERIA ACTÆON*.

By REV. W. CLAXTON.

It would be very interesting if some of your Dorsetshire correspondents would contribute some information about *Hesperia actæon*, and, in the hope of inducing them to do so, I send these few notes. My own acquaintance with this butterfly dates from about the year 1870, when as a boy I used to visit Lulworth for the purpose of taking it. At that time there was a spot (not undercliff) about a mile and a half to the east of the cove along the shore, where they were in great abundance, almost equal to that described by Mr. Douglas, and quoted by Stainton and Newman. In those days I only once visited the Burning Cliff, and found them not so plentiful as at Lulworth. After 1875, I did not go to Weymouth again till 1889, and in that year I immediately made for the spot in which *H. actæon* was so abundant in former years. To my dismay, there was not a single specimen to be seen, and the place itself seemed altered in character. Perhaps the food-plant had disappeared from that piece of ground. However, they were to be got, though not in great numbers, on two small tracts of undercliff in Lulworth Cove itself. In 1890 I found them very scarce, and in bad condition, though I went at the usual time, *viz.*, early in August, so that I supposed they might have emerged earlier than usual that year. In 1891 I could not get to Weymouth till September, and did not then try for *H. actæon*, as I thought they would be over. However, I saw one perfectly fresh specimen taken at Lulworth one day that I went there. I had been over the ground myself to see if I could find any of the larvæ, but I could see neither them nor the imagines. This year I determined upon a serious campaign against *actæon*, which I started by trying Lulworth on July 27th.

There was not a single specimen to be seen, though I was told by the waiter at the hotel that gentlemen had been taking them before that date. A week later I tried Lulworth again. This time it was a dull day, and I took one specimen in good condition. Meantime I had been twice to the Burning Cliff, and there found them tolerably plentiful, but at that time they were mostly males and in bad condition. After that I confined my attention entirely to the Burning Cliff, going there every two or three days for the next fortnight, and each time found what seemed to be a fresh batch both of males and females in splendid condition. The last date on which I went was August 13th, and on that day I took some of the most recently emerged specimens I got at all. I was careful to limit myself in the number I took each day, in order to avoid anything like extermination. I was rather surprised that I never met any other entomologist at the Burning Cliff, but I do not think that the exact spot where *H. actæon* lives is very well known. I discovered a spot unknown to me before, and, from the look of it, I should say untried by anyone else, where the species was much more abundant than in any of the other places I knew of.

On the whole, I think that *H. actæon* has become much less common than it used to be, but one would like to hear what other collectors have to say about it. At least I am sure that the halcyon days of Mr. Douglas have gone for ever. The butterfly has entirely disappeared from one spot where it abounded, and I find that one of the localities in Lulworth Cove has lately been converted into a fowl-run, so that I do not think there will be much chance for it there in future. I believe, however, that more localities might be found along the cliffs if carefully searched by residents, and at the Burning Cliff it is still fairly plentiful. It would be a thousand pities if this lovely little butterfly were to share the fate of *Polyommatus dispar*. I have never seen a more charming entomological picture than is presented by a newly-emerged specimen as it sits on a spray of bramble or stem of grass, with its semicircle of spots glowing in the sun almost like dots of gold.

They seem to prefer ground which is very much overgrown with tall rushes, and they are also fond of sitting on teasle-heads to suck the honey, and not unfrequently on thistles and brambles. On a dull day they do not fly at all, but they may frequently be found at rest among the rushes, and it is then easy to see whether the insect is in good enough condition to be caught or not.

They are not by any means too easy to catch, as, unless you take them as soon as you see them, their flight is most difficult to follow with the eye. And if you plump the net downwards over them, they often wriggle down into the long grass and get lost to sight. It is by no means easy to get really fine specimens. They are very active and pugnacious with other species of butterfly,

and I think they must be taken almost within the hour they emerge to be in really good condition; and even when so taken, there is a sort of beautiful fulvous bloom about them which seems to go off after they are dead. The males, when alive, are, I think, more beautiful than the females, but it is almost impossible to get them in perfection. Out of some thirty or forty males which I took, only one was quite beyond reproach. As soon as they have been out a little while, the spots seem to disappear. Lastly, as far as my experience goes, where you find *H. actæon* you will also find *Argynnis aglaia*, *Melanargia galatea*, *Satyrus semele*, *Lycæna corydon*, and, later on, *L. adonis*, in greater or less abundance.

Hartley Wintney, Winchfield.

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## A TOMATO CATERPILLAR (*HELIOTHIS ARMIGERA*).

By J. ARKLE.

FRUITERERS and others who import Valencia tomatoes in the months of June and July will have noticed among the fruit an occasional caterpillar, about an inch and a half long, apparently quite smooth, greyish, but ornamented with blue or purple touches, and with a drab-coloured zigzag stripe along each side.

In this north-western part of the country the tomatoes arrive, from Spain, at Liverpool, packed in small shallow boxes. A number of these boxes, in their turn, fill a case, and, after the excise officer has tapped one or two, they find themselves diverging miles away to the various shops, where they are received by the retail dealers and dispensed to tomato-eating customers.

It was last year when I began an acquaintance with the caterpillar, which escapes, in the first instance, the eye of the swarthy packer in Valencia, and, lastly, the keen scrutiny of the Custom House officers at Liverpool. Two specimens were sent to me, with the several tomatoes in which they had nearly buried themselves; but, as I used an ordinary tumbler for a cage with a piece of glass over the top, the larvæ were drowned in the unhealthy juice generated under such insanitary conditions.

In June and July of this year I obtained about a dozen caterpillars, a number which was reduced to about six, through having to pass into non-entomological hands. I have a description of them in my note-book, which runs as follows:—Ground colour, dorsally, light brown or warm ochreous, beautifully striated with thin light brown and yellow lines; under side, legs and claspers a darker shade. Head light brown, reticulated with ochreous. Second segment black, reticulated with cream colour. There is a double very thin blue-black medio-dorsal line down the entire length of the caterpillar. On each side—below this delicate double line,



which is pencilled as if by an unsteady hand—there is a space or interval of the ground colour. Then succeed four or five more lines close together, and similar to the dorsal ones. Lastly, there is a broad waved drab or light ochreous stripe all along the side and containing the jet-black spiracles. Each segment has, dorsally, four jet-black minute spots or tubercles, each of which emits a black bristle. The whole dorsal surface is sparingly clothed with minute hairs. This is, I believe, the caterpillar of the male; that of the female is slightly greenish, the markings are almost similar but exceedingly faint, the conspicuous side stripe is absent or nearly so, and there are purplish oblique dashes or suffusions on the sides of each segment. The caterpillar of what I take to be the male has a bluish instead of a purplish appearance.

I kept the larvæ, this season, in a flower-pot half filled with soil, and placed them on a warm kitchen shelf. Any juice which might run from the food (a tomato or two) was therefore absorbed, and the soil turned out to be a natural place for pupation.

The first caterpillar disappeared on June 26th, and the first two moths emerged July 27th; a third appeared on the 15th of August, while a caterpillar I had kept out of doors appeared as a perfect insect August 11th.

Of the four moths I bred, two, I believe, are females. In this sex the upper wings are reddish, with two central, but indistinct, dark brown waved transverse lines. These lines include the black orbicular dot, and the adjacent pale circular reniform. The lower wings are straw-coloured, with a central dark brown crescentic mark. Parallel with the outer margins of upper and lower wings, in both sexes, is a broad dark brown band. The antennæ, in both sexes, are simple. The thorax, which has a thin longitudinal crest, is, in the female, of the same colour as the fore wings, while the body is straw-coloured, with a median dark brown shade. In the male all the wings, thorax, and body are straw-coloured; but the fringes of the upper wings are reddish, as in the female.

My next step was to get the moths identified, and in this I had every assistance from Messrs. Watkins and Doncaster, of the Strand, London, who not only named the insects, but enabled me to acquire much useful information respecting them.

The geographical range of the moth appears to be a wide one:—South Africa, India, some of the Indo-Malayan Islands, Australia, and notably the United States of America, where it attacks, in the larva state, the cotton crop. It also devours many other plants, such as Virginia creeper, potato, &c. It seems to occur but sparingly in this country (see Newman's 'British Moths,' p. 439). Had we a dryer climate, *H. armigera* might soon become a serious imported scourge to our gardeners and agriculturists.

Chester, Sept. 8, 1892.

Mr. Tugwell (Entom. x. 283) gives an interesting life-history of *Heliothis armigera*, and states that he reared the larva on geranium. In the autumn of 1875 larvæ of this species were found in the Isle of Wight feeding on the flowers of geranium; they seemed to have been common in the particular spot where they were found, and varied considerably in colour and markings (Entom. ix. 261). Some larvæ were found at Biarritz in October, 1881, feeding on flowers of the evening primrose, but they also ate honeysuckle flowers that were given to them. Subsequently, when brought to England, they were supplied with chrysanthemums, and exhibited a marked preference for the yellow varieties (Entom. xvi. 23) —ED.

## NOTES ON RHOPALOCERA FROM ITALY, &c.

By FRANK B. NORRIS.

BUTTERFLIES did not appear abundant on the Riviera when, towards the end of March, I arrived there. The most notable were:—

*Thais polyxena*, Schiff., var. *cassandra*, Hb.—At mouth of river Roya in April; caterpillars on *Aristolchia* in cane-brakes in May.

*Euchloë eupheno*, L., var. *euphenoides*, Stgr.—Rather common, here and there, at some considerable altitude; Cima D'Ours, May 12th; and above Villefranche at end of May.

*Lycæna baton*, Berg., and *L. melanops*, Bdv.—At several places on coast where thyme flowered freely, and in Roya valley, April and May.

*Vanessa egea*, Cr.—Not rare; common at Finalmarina in May.

*Melitæa aurinia*, Rott., var. *provincialis*, Bdv.—On Cima D'Ours, May 12th.

*Melanargia syllius*, Hbst.—Abundant over grassy slopes at Villefranche and Ospedaletti throughout May; less common at Ventimiglia, near Andora, and Noli.

Passing over the Col di Tenda, and seeing for the first time *Lilium pomponium* in blossom, I arrived at La Certosa di Pesio on June 1st. The following is a list of butterflies seen and captured in this district:—

*Papilio podalirius*, L. (sinon. Poda).—Common. Specimens of the second brood measured 3.45 inches in expanse; the tails,  $\frac{3}{4}$  inch in length.

*P. machaon*, L.—Two broods; fairly common.

*Parnassius apollo*, L.—Abundant June, July, August, and beginning of September, from 2800 to 6000 feet.

*P. mnemosyne*, L.—Swarmed during June and July, up to 5000 feet.

*Aporia crataegi*, L.—Meadows in lower valley; June.

*Pieris brassicæ*, L., *rapæ*, L., *napi*, L., and var. *bryoniæ*, O.—All common.

*P. callidice*, E.—Common on Monte Faschia, Gias del Ortiga, and highest green Alps, in July.

*P. daplidice*, L.—In Lower valley; June.

*Euchloë belia*, F., and var. *simplonia*, Bdv.—On Monte Bruseis, &c.; June 15th and later.

*E. cardamines*, L.—Common up to first week in August.

*Leucophasia sinapis*, L.—In early June. Ab. *erysimi*, Bkh.—Was the common form found in July. Ab. *diniensis*, Bdv.—Not rare; July, at Beinette.

*Colias phicomone*, E.—Very abundant on Cima Car, Monte Bruseis, and Passo Babane, in July and August.

*C. palæno*, L.—I feel sure I saw in July two or three specimens on Monte Mongioje, but a furious mountain wind prevented my taking anything.

*C. hyale*, L., and *edusa*, F.—Abundant. Ab. *helice*, Hb.—Was of frequent occurrence.

*Gonopteryx rhamni*, L.—Abundant all summer.

*G. cleopatra*, L.—Less common; July.

*Thecla betulæ*, L.—Flying over chestnut trees, near the old castle of Chiusa, and having a strong predilection for certain trees, branches, and even leaves. Their flight was bold and rapid, and if by chance two met they circled round each other, up and out of sight. A pole fixed to the net, quite 20 feet long, was necessary to take them. The males measured on an average 1.75 inch. They appeared to fly chiefly from 9 a.m. to 11 a.m., and during the great noonday heat they were very inactive. First seen July 26th; worn or over by middle of August.

*T. spini*, Schiff.—Two broods, the second of which appeared towards end of July. Females of this brood often belonged to ab. *lynceus*, Hb., and I venture to suggest that the supposed hybrid, mentioned by Mr. F. Bromilow in the August number of the 'Entomologist' (p. 193), was one of this aberration. This insect was fond of elder-flowers.

*T. w-album*, Kn.—Not uncommon on and around wych-elms in Val Pari, Val Sestrera, and Val Cavallo; they also had a great partiality for the flowers of the dwarf upright elder. First seen July 24th and up to August 6th. I noticed this insect took to the flowers if the wind blew at all strongly.

*T. quercus*, L.—Occurred, generally singly, in the Certosa neighbourhood. First seen July 25th.

*T. rubi*, L.—Common in June.

*T. ilicis*, E.—Generally distributed in June and July; they appeared fond of flowers of the white *Sedum*. Var. *æsculi*, O.—Not at all rare.

*Polyommatus virgaureæ*, L.—Abundant July, August, and into September; everywhere up to 5000 feet. Some females showed the usual white marks of the under surface of hind wings, also on the upper surface of same.

*P. dispar*, Haw., var. *rutilus*, Wer.—I was somewhat surprised and pleased to find this beautiful insect round the great springs of Beinette on July 29th. This species must have a great struggle for existence, I imagine, as all the marsh plants are cut down in August.

*P. hippothoe*, L., var. *eurybia*, O.—Abundant up to 6000 feet on marshy spots. Some few females were typical *eurybia*; others had fulvous brown markings, and apparently belonged to var. *stieberi*, Ger. Two specimens, male and female, were marked on the under sides with elongated black streaks, instead of the usual spots, on both upper and lower wings.

*P. alciphron*, Rott.—Very common. Var. *gordius*, E.—Much scarcer.



*P. dorilis*, Rott.—Frequently met with in June and August. Var. *subalpina*, Spr.—Here and there, high up, in middle of July. Females of this variety very scarce.

*P. phlaeas*, L.—Common. Ab. *eleus*, F.—In August, in lower valley.

*Lycæna telicanus*, Hb.—Not common; around the Beinette springs, July 18th and later.

*L. argiades*, Pall.—I had taken several females below Chiusa, but could find no males for several days, until, after a long search, I discovered them on August 18th flying in one spot in a large dry clover field, at more than a mile distant from the place where I had previously captured the females.

*L. agon*, Schiff., *argus*, L., and *orion*, Pall.—All common in July and August.

*L. orbitulus*, E.—On highest pastures in July; scarce.

*L. astrarche*, Berg.—Common.

*L. eros*, O.—Not common; 6000 feet and over.

*L. icarus*, Rott.—Abundant.

*L. amandus*, Hb.—Beginning of June in Val Cravina; scarce.

*L. escheri*, Hb.—Abundant on damp spots in mountains.

*L. bellargus*, Rott.—Two broods.

*L. hylas*, E.—Frequent but local, high up. Females late in August in Val Cravina and under Monte Bruseis.

*L. corydon*, Poda.—Swarming in July and August. Some males were very white above.

*L. meleager*, E.—Here and there in July and August.

(To be continued.)

## ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA AND C. HYALE IN 1892.—A large number of communications have been received during September referring to the occurrence of these species in Britain. As many of the records came to hand too late to be inserted in the list, under their proper county heading, it was deemed advisable to defer publication of the whole until November.—ED.

PLUSIA MONETA BRED.—We are pleased to inform our readers that this species has been bred, on September 5th and 13th, by Mr. Gervase F. Mathew, who found pupæ on monkshood in a garden at Frinstead in Kent. Full particulars of this interesting and important event will appear in a paper by Mr. Mathew, which will be published in the November 'Entomologist.'—ED.

TAPINOSTOLA EXTREMA IN STAFFORDSHIRE: A CORRECTION.—I have to apologise to you and your readers for having too hastily recorded the capture of *T. extrema* (*concolor*), (Entom. 197). I send you the insect, and I think you will allow that its close resemblance to the figure and description in Newman, and to the coloured figure in Morris, is some excuse for the mistake. I fully acknowledge that I ought to have taken further steps to identify the insect before recording it. Since writing to you last, I sent the insect to Mr. Farn, with whom I had been in correspondence. At the first look at it he was inclined to believe it really was *extrema*, but on further examination came to the conclusion that it was a worn specimen of *Miana*

*arcuosa*, a conclusion with which, I think, you will agree. With regard to Mr. Barrett's remarks, which appeared in your last issue, every one must agree that local lists should be subject to extremely close scrutiny; but I cannot quite agree with the whole force of his remark as to "how improbable the statement is," *i. e.*, that the insect in question should occur in Staffordshire. New insects are constantly turning up in unexpected places, and the "mosses" that are so common in this neighbourhood are probably remains of glacially-formed lakes that have filled up by the growth of vegetation, abound in marsh plants, and have, many of them, never been drained or much interfered with by man since their formation. I suppose the locality in which, when with Mr. Daltry, I took *Deiopeia pulchella* in June, would be about the last place in the country where we would expect to find it; and yet of that capture there can be no doubt. — F. C. WOODFORD; Market Drayton, Sept. 21, 1892.

[The specimen is certainly a worn male of *Miana arcuosa*, and it may be added that this is not the first time that examples of *arcuosa*, in indifferent condition, have been confounded with *Tapinostola extrema*, Hübner. With regard to the last-named insect, there is great difference of opinion among entomologists as to its proper status. Some are inclined to think that it is distinct from Guenée's *concolor*. Others contend that neither *extrema* nor *concolor* are entitled to rank as species; these argue that Hübner's figure 412 (*extrema*) badly represents *T. bondii*, Knaggs, and that *concolor* is only a local form of *T. fulva*. A third, and perhaps largest, section admit *concolor* to be synonymous with *extrema*, but regard the latter as perfectly distinct from *T. bondii* or *T. fulva*.—ED.]

SUGAR-CANE BORERS.—The 'Kew Bulletin' for July and August contains an important paper on insects injurious to the sugar-cane crops in the West Indies, but dealing more particularly with the "Shot-borer" (*Xyleborus perforans*). The author, Mr. W. F. H. Blandford, F.E.S., Lecturer on Entomology at Cooper's Hill, quotes and comments upon the observations and opinions of previous writers on the subject, and then proceeds to state his own views and conclusions. The *Xyleborus*, together with the "Weevil Borer" (*Sphenophorus sacchari*) and the "Moth Borer" (*Chilo saccharalis*), are figured on the plate which accompanies the paper.

ARGYNNIS PAPHIA, ABERRATION.—During a week's stay in the New Forest, Mr. J. H. Carpenter did good work with *A. paphia*. Among the white-spotted forms he captured is a very remarkable female, taken July 23rd last, which he has placed in my hands for description. The primaries have each two large white blotches; both are spreading, with white centres and blending into straw-yellow; the one occupying the centre of the wing surrounds the black markings, and is tinged with pale olive-green over the basal area; the other, which is subapical, is very white and clearly defined. The secondaries exhibit curious coloration, having a very large spreading pearly green blotch, reaching from the submarginal series of spots nearly to the base, the colouring of the blotch approaching that of var. *valesina*, but considerably lighter, especially on the right wing, having the outer and central portion whitish; some of the spots forming the median band are brown instead of the usual deep black. The under surface has the colouring and markings of the variation precisely similar to the upper surface. I captured a female on the 17th July, near the same part of the Forest, with the secondaries exhibiting almost the same variation in colour, but not quite so clear and white. Another of

Mr. Carpenter's captures is that of a male, with the apex of the right primary white. The var. *valesina* was in great abundance, and generally very deep in colour. I have succeeded in obtaining a large number of eggs from *valesina*; therefore, should I succeed in rearing a good number of imagines next season, I hope to be able to record in what proportion *valesina* reproduces *valesina*.—F. W. FROHAWK; Sept. 1892.

CATOCALA NUPTA, ABERRATION.—I have pleasure in recording the capture of an exceedingly fine form of *C. nupta*, taken at rest at Mitcham, Surrey, on August 27th last, by my friend Mr. Mark Winkley. The coloration of the secondaries is remarkable, having all the usual red colour replaced by a very delicate warm brown, and a purplish glow covering the entire surface of the wings; both the marginal and median bands are broader than usual, and finely shot with purple. The primaries are also considerably deeper in colour, the ground colour being of a deep smoky grey; the dark markings are strongly pronounced; the reniform is large and black, in strong contrast to the whitish blotch bordering the inner edge. Under surface: the secondaries are coloured as above, there being no trace of any red colouring, and all the black bands of primaries and secondaries are shot with purple. It is a large female, measuring  $3\frac{3}{8}$  inches in expanse, and apparently freshly emerged.—F. W. FROHAWK.

EPINEPHELE HYPERANTHUS, VARIETY.—I captured a nice example of the lanceolate var. of this species in Denny Wood, New Forest, on July 18th last, the large lanceolate markings being very prominent.—JOSEPH H. CARPENTER; Streatham, Sept. 6, 1892.

VANESSIDÆ IN LANCASHIRE.—*V. cardui* and *V. atalanta* have both been common in Lancashire this year.—S. RENSHAW; Ash House, Stretford, Manchester, Sept. 9, 1892.

VANESSA ANTIOPA IN CAMBRIDGESHIRE.—*V. antiopa* was seen in a garden near here a short time ago. I have only seen two *V. polychloros* this year. *V. io*, *V. cardui*, *V. atalanta*, *V. urticæ*, *Polyommatus alexis*, *P. alsus* (in chalk pits), *Thanaos tages*, *Pamphila sylvanus*, &c., have been extremely abundant here.—(Miss) MADGE A. WILSON; Guilden-Morden Vicarage, Royston, Cambs, Sept. 2, 1892.

LYCENA CORYDON IN EPPING FOREST.—It may be interesting to note that on the 22nd inst. I captured a freshly-emerged male specimen of *Lycena corydon* at Fair Mead, Epping Forest.—J. BERNARD ARGENT; Woodford Wells, Aug. 23, 1892.

NOTE ON PARNASSIUS APOLLO IN SWITZERLAND.—Mr. Leech states (Entom. 218) that he has never seen *P. apollo* in Switzerland at a lower elevation than 4500 feet. I saw it this last summer, and in 1890 and in 1891, in abundance in the road between Aigle and Sepey, the latter place lying at an elevation of 3700 feet. I also saw it in abundance at the entrance to the Val d'Anniviers in all the aforesaid years. This would be at a height of about 3100 feet. It is also abundant in the road leading from Sion to Evolina, at an elevation of certainly not over 4000 feet. And, lastly, though this does not exhaust the places in Switzerland where it occurs at under 4000 feet, I saw several specimens when (in 1891) I was going up to Chaumont from Neuchatel. The former place lies 3850 feet above sea-level.—R. B. POSTANS; Eastbourne, Sept. 6, 1892.



**DEIOPEIA PULCHELLA IN SOUTH WALES.**—On the 8th June last a specimen of a *Deiopeia pulchella* was taken on the wing here by Mr. Oliver H. Jones, of Founmon Castle, and brought in to me alive. The red spots on the wings are very much paler than is usually the case with foreign specimens. Another specimen of this insect was taken about a mile from here some twelve years ago by Mr. S. H. Romilly, and is, I believe, now in the collection of Lord Walsingham.—W. E. R. ALLEN; Porthkerry Rectory, Barry, Cardiff, Sept. 12, 1892.

**DEIOPEIA PULCHELLA NEAR SOUTHAMPTON.**—A very perfect specimen of the rare crimson-speckled *Deiopeia pulchella* was captured on June 10th, by Mr. L. Rybot in a field on the right bank of the Itchen, not far from Southampton.—'Nature,' June 16, 1892.

**EUCHLOE CARDAMINES IN AUGUST.**—When on a visit to Mr. G. F. Wilson's experimental gardens at Wisley, Surrey, on August 20th last, he informed me that on the Thursday previous (18th) both himself and his head gardener saw a male *E. cardamines*, which flew close by them. This he said was the second specimen the gardener had seen the same week. They were undoubtedly representatives of a second brood.—F. W. FROHAWK; Sept. 1892.

**SPHINX PINASTRI IN SUFFOLK.**—My sons and self, during the first portion of August, captured eleven specimens of *S. pinastri* during the daytime, sitting on the Scotch firs in some woods near here. We left several more, which were damaged specimens, on the trees. From a female we got several eggs, and have a nice quantity of larvæ feeding well on Scotch fir for the last ten days.—RENDLESHAM; Woodbridge, Sept. 4.

**EREBIA ÆTHIOPS AT ARNCLIFFE.**—On August 20th, 1892, I found *Erebia æthiops* fairly abundant in an opening in a wood at Arncliffe, Yorkshire, at a height of about 1000 feet. Most of them were in bad condition. The opening was covered with *Geranium sanguineum*. *Charæas graminis* was also fairly plentiful upon ragwort (*Senecio jacobæa*).—H. WILDE; Clay Hill House, Enfield, Sept. 15, 1892.

**COSMIA PALEACEA IN SHERWOOD FOREST.**—As supplementary to Mr. Ferris' note (Entom. 222), re *Cosmia paleacea* (*Euperia fulvago*), my brother and I sugared for it at all its well-known headquarters in Sherwood, near to Edwinstowe, on the evening of August 25th last, and obtained but three specimens, all in a worn condition. As Mr. Ferris took it in numbers a fortnight earlier in the same district, I think we may put down its date of appearance as first week in August.—W. D. CARR; Lincoln, Sept. 2, 1892.

**HADENA SATURA IN KENT.**—On the 19th August, G. Parry sent me a fine female *H. satura* alive, and on the 24th a second specimen, a male; this he sent me also alive. It is seventeen years since he took a specimen before. On putting this fine addition in my cabinet, I was struck with the large patch nearer the outer margin being like some of my *H. atriplicis* in form, but nothing at all like my *Crymodes exulis* from Inverness-shire. By the way, I have two Noctuæ among my *C. exulis*, ticketed, "Captured in Shetland, by John Rennie, 1876." Mr. Briggs, when here, said he did not know them, and had never seen any specimens like them.—J. B. HODGKINSON; Ashton-on-Ribble, Aug. 31, 1892.

FOOD-PLANT OF *CELÆNA HAWORTHII*.—Like your correspondent, Mr. Searancke (Entom. 222), I should be glad to know of some other food-plant for *Celæna haworthii* besides cotton-grass. I took a nice specimen, flying over the heather in the bright sun, on August 22nd, and another in the same spot the following day. On the 24th another was brought to me, it having flown into one of the rooms at the top of the castle at night. I am the more anxious to know the food-plant of this species, as I obtained ova from the second which I took. As far as I have observed, no cotton-grass grows about here at all.—(Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2, 1892.

SIREX GIGAS AT CHICHESTER.—A very fine female *Sirex gigas* was taken here on August 24th. In some years they are plentiful in this locality.—JOSEPH ANDERSON, Jun.

SIREX JUVENCUS IN MIDDLESEX.—I had a female specimen of this sawfly brought me yesterday for identification by a friend, who had captured same in Belsize Park.—JOSEPH H. CARPENTER; Streatham, Sept. 6, 1892.

THE COLEOPTERA OF NORFOLK.—Mr. J. Edwards, of Colesborne, Cheltenham, is preparing for publication a list of Norfolk Coleoptera. The ordinary sources of information having been exhausted, he appeals to those who have collected in that county for lists of their captures.

CARSIA IMBUTATA AND CIDARIA POPULATA IN LANCASHIRE.—In August last I took a good many *C. imbutata* at the place where I took *Celæna haworthii*. *Cidaria populata* was common in the same locality, amongst them being a good proportion of dark varieties. — (Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2, 1892.

BUTTERFLIES IN THE ALPES MARITIMES.—On an excursion to a mountain near here, called the Pepiori (8774 ft. above sea-level), on July 18th last, I captured the following species of Rhopalocera, viz.:—*Pieris callidice* (several, abundant, but *passé*); *Colias phicomone* (three males); *Melitæa parthenie* v. *varia*, Meyer-Dür (three females, common); *Erebia melampus*, Esp. (or *cassiope*?, probably the former; one), and a single female specimen of *Cenonympha iphis*, Hüb.; these latter seemed to be nearly over. Near the top I secured *Erebia mnestra*, Hüb., one male and two females; also *E. tyndarus* (type); this last species is not very common here, being usually replaced by the var. *dromus*, H.-S., or by a form intermediate between the typical insect and the above-mentioned variety. I also took two males and two females of *E. gorge*, Esp., and, near the top, a very fine example of the ab. *erynis*, Esp. I had the misfortune to break my net short at the handle at this juncture, but notwithstanding persevered. The great prize, however, was undoubtedly *Erebia lappona*, Esp., which I only saw at the summit itself. It was the only species on the wing, except a solitary *Vanessa cardui*. I took three specimens (a male and two females), all worn. As far as I am aware, it is new to the entomological fauna of the district.—F. BROMILOW; St. Martin Vésubie, Alpes Maritimes, France, Aug. 5, 1892.

NOTES ON THE SEASON: WINDERMERE.—Sugaring here, during June and July, has this year proved quite a success. I have been in Windermere since June 22nd, and from that date till the end of July I sugared nearly every evening with varying success. Some nights the patches of treacle

were absolutely swarming with moths, especially after heavy rain, and on one or two evenings with some thunder. From June 22nd to the end of July I took the following:—*Thyatira batis*, two. *Cymatophora duplaris*, several. *Acronycta ligustri*, one; *A. rumicis*, common, some fine dark specimens. *Leucania lithargyria*, common; *L. comma*, several; *L. impura*, several; *L. pallens*, one. *Xylophasia rurea*, very common and variable; *X. lithoxylea*, common; *X. monoglypha*, quite a pest, some very fine black varieties. *Apamea basilinea*, common; *A. gemina*, several; *A. didyma*, common. *Miana strigilis*, common. *Grammesia trigrammica*, several (I have not found this moth so far north before). *Rusina tenebrosa*, several. *Agrotis exclamationis* and *A. corticea*, the latter being very plentiful, and individual specimens very different. *Triphæna comes*, a few; *T. pronuba*, very common as usual. *Noctua augur*, quite a pest, especially after it had been out some time, as many specimens turned up so worn as to be hardly recognisable; *N. plecta*, very common; *N. c-nigrum*, two; *N. triangulum*, four; *N. brunnea*, common; *N. festiva*, very common and variable; *N. baia*, a few. *Calymnia trapezina*, a few. *Euplexia lucipara*, common. *Aplecta prasina*, one; *A. nebulosa*, very common; *A. tinctoria*, three. *Hadena dentina*, a few; *H. oleracea*, common; *H. thalassina*, very common, and in good condition till the first week in July; *H. rectilinea*, one (I have not heard of it being taken here before). *Gonoptera libatrix*, one or two hibernated specimens. *Mania typica*, very common. At light, from June 22nd to the present date, September 3rd, I have taken the following:—*Bryophila perla*, a few. *Hydracia nictitans*, several. *Xylophasia rurea* and *X. monoglypha*, very common. *Neuronia popularis*, common. *Charæas graminis*, very common. *Apamea didyma*, *Miana strigilis*, and *Agrotis corticea*, all very commonly. A specimen of *A. ashworthii*, which had been attracted to light, was brought to me from Llangollen by a friend. *Tryphæna comes* and *T. pronuba*, common. *Noctua glareosa*, a few; *N. augur*, *plecta*, *brunnea*, *festiva*, *dahlii*, and *xanthographa*, common. *Calymnia trapezina*, common. *Polia chi*, common. *Cleoceris viminalis*, common. *Hadena dentina*, a few. *Hubrostola triplasia*, several. *Plusia chrysis*, one; *P. iota*, several; *P. pulchrina*, five; *P. gamma* came out about a week or so past in great abundance; *P. interrogationis*, one (I found the chrysalis of another spun up amongst some heather, which emerged the following day). *Amphipyra tragopogonis*, a few. As to *Geometræ*, amongst others, I have taken the following:—*Uropteryx sambucata*, *Eltopia prosapiaria*, *Selenia illunaria*, *Odontopera bidentata*, *Crocallis elinguaris*, *Boarmia repandata* and *B. rhomboidaria*, *Macaria liturata*, *Halia vauaria*, *Lomaspilis marginata*, *Larentia didymata*, several different species of *Eupithecia*, *Melanthia albicillata*, *Coremia munitata*, *designata*, *ferrugata*, and *unidentata*, *Oidaria truncata* (very variable), *C. prunata*, *testata*, *populata*, *fulvata*, *dotata*, *Anaitis plagiata*, and *Tanagra atrata*, in great abundance.—A. M. Moss; Ellerthwaite, Windermere, Sept. 3, 1892.

NOTES FROM BATH.—*Lycana bellargus* (adonis) has turned up here this season. I have never met with it before during the few years I have collected in this neighbourhood. *Plusia gamma* has been very abundant, and I took a few *P. iota* in June. Among other things, *Geometra vernaria* and *Phibalapteryx tersata* have been fairly common. Larvæ of *Euchelia jacobæ*, *Spilosoma menthastri*, and *Phalera bucephala*, are very abundant just at present. Altogether it is the best season I have had here, although some few species have been scarce, notably *Bryophila perla*, which is



usually very abundant.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath, Sept. 12, 1892.

CAPTURES IN THE NEW FOREST.—During a week (August 4th to 11th) in the New Forest, near Brockenhurst, we captured, amongst others, the following species:—*Argynnis paphia* (abundant), *A. paphia* var. *valesina* (worn specimens), *A. adippe* (abundant), *A. aglaia* (1 female), *Vanessa polychloros* (3 females), *Limenitis sibylla* (worn specimens), *Apatura iris* (1 female, worn), *Satyrus semele* (abundant), *Thecla quereus* (abundant), *T. betulæ* (1 male), *Lycæna argiolus* (2 males), *L. ægon* (abundant), *Rhodocera rhamni* (abundant), *Colias hyale* (1 good male), *Liparis monacha* (a female), *Heliothis dipsaceus*, *Anarta myrtilli*, *Thyatira batis*, *Triphæna fimbria*, and several commoner kinds; also a larva of *Acronycta alni* (now spun up).—F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

A CURIOUS PARASITE.—In the New Forest, last July, I netted a good series of *Epinephele tithonus* for the purpose of obtaining a well-marked series, and, upon taking them off the setting-boards, I observed something peculiar in the appearance of a very large female. This proved to be a worm; it has partially come out from between the jointure of the head and thorax. In colour it is light brown, polished; head blunt, and about the thickness of a coarse horse-hair. It emerged spirally, and I should say, if straightened, would be quite an inch and a half long; but how much is still in the butterfly I cannot say. Both are well preserved; the parasite lies over the body of its host, but in drying has slightly discoloured.—J. H. FOWLER; Poulner, Ringwood, Aug. 1892.

[This is probably a *Filaria*, one of the Nematode worms. Such parasites have been detected in beetles and earwigs. In some instances the worm has been found to measure fully two inches in length.—ED.]

THE ELECTRIC LIGHT.—I made some remarks in Entom. xxiii. 222, re the attraction of electric light for Lepidoptera in the case of the Eddy-stone lighthouse at the Naval Exhibition. I visited the same lighthouse (now being exhibited in the Botanical Gardens at Old Trafford) on the 19th of August, with a view to estimating its power of attraction, and I must confess was astonished at the number of moths present. Before ascending one could see them from below, flashing in and out of the rays in hundreds, and on reaching the top the place was full of them; some, apparently dazzled by the light, frantically flying in all directions, buzzing and banging in your face, up your sleeves, down your neck, everywhere. In every sheltered niche and cranny four or five were to be seen together, and especially was this so on the staircase, which was strewed with their partially cremated remains, the result of their all too successful attempts at self-immolation. The species were more remarkable for quantity than quality, as the following list will show. The genus *Triphæna* was the best represented, *T. ianthina* and *T. interjecta* being the only species not observed. *Xylophasia polyodon*, *Leucania conigera*, *L. lithargyria*, *L. pallens*, *Mamestra brassicæ*, *Apamea gemina*, *Caradrina morpheus*, *Agrotis nigricans*, *Noctua umbrosa*, *N. xanthographa*, and *Plusia gamma*, were all very abundant. The above were all I could identify during the five minutes I was there; but I have no doubt that anybody, spending even half an hour there, could add considerably to the list. The night was fine, with a gentle S.S.W. wind blowing.—DOUGLAS STUART STEWART; North Leigh, Prestwich, Lancashire, Aug. 22, 1892.

**SUGAR AT CHESTER.**—The season continued to promise so well that I was tempted, on the night of July 4th, to try sugar again in this neighbourhood. To those who are acquainted with our local geography, I may say I selected a spot new in my experience, *viz.*, the field just beyond Curzon Park. The ground is about 100 ft. above the River Dee, which is close by, and the treacle was applied to the isolated trees growing about. There was a slight breeze from the west, and a cool temperature. Contrary to all my previous ill-luck in the neighbourhood, moths literally swarmed to the treacle. The following is a list, arranged according to abundance:—*Miana strigilis* var. *athiops*, *Agrotis exclamationis*, *Noctua augur*, *Triphæna pronuba* (fine forms), *T. orbona*, *Xylophasia monoglypha* (*polyodon*), *X. hepatica*, *Mamestra furva* (?), *Caradrina taraxaci* (*blanda*), *Acronycta rumicis*, *A. psi*, *Spilosoma lubricipeda*. *M. strigilis* exhibited three forms of the variety *athiops*. The first has a broad steel-grey band, parallel with the exterior margin of the fore wings; the second has the fore wings suffused with rust-colour; the third form is altogether black. On the night of July 11th, I sugared again at the same place. There was a cold breeze from the south-east, and the moon rose about eleven o'clock. Altogether it was not such a favourable night as the preceding one. In addition to most of the species for July 4th, the following also came to sugar:—Type forms of *M. strigilis*, *M. furuncula*, *Hadena oleracea*, *H. pisi*, *Xylophasia lithoxylea*, *Noctua plecta*, *Mania typica*, *N. festiva*, *Tortrix corylana*, *Acidalia aversata*, and *Xanthosetia zægana*. My next sugaring visit to this locality occurred July 14th. It was a still, dark night. All forms of *M. strigilis* were comparatively scarce. Additional moths were *Leucania conigera*, *N. c-nigrum*, *N. triangulum*, and *Camptogramma bilineata*.—J. ARKLE; Chester.

**SUGARING AT DULVERTON, SOMERSETSHIRE.**—On the 24th July, I tried sugaring in a wood near the town, but not more than half a dozen moths came to it, though the night was apparently all that could be desired; but perhaps the enormous masses of honeysuckle about had superior attractions.—PHILIP DE LA GARDE; Dulverton, Somerset.

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## SOCIETIES.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—August 28th, 1892.—Mr. Richard South, Vice-President, in the chair. Mr. Frohawk exhibited a fine bred series of *Colias edusa*, Fb., all the females being tinged with green in the hind wings; also a living larva of *Carterocephalus palæmon*, Pall. Mr. Carrington said few entomologists had had the good fortune to see the larva of this species, although he had an unpublished record of it dating as far back as the fifties. Mr. Carpenter, a series of *Argynnis paphia*, L., and var. *valesina*, Esp., amongst the former species was a beautiful variety of the male, the hind wings taking the character of *valesina*; also a series of *Epinephele hyperanthes*, L., with lanceolate markings; he stated that he had taken some hundreds in the New Forest this year, and found no variation. Mr. Macmurdo, a series of *Bryophila perla*, Fb., and remarked that the lichen on the wall from which they were taken varied considerably. Mr. Adkin said the variation appeared to him to arise from an increase in the size and tone of the darker markings, the whole of the specimens



being of a form in which the ground colour was white; he thought that in some districts the ground colour of the wings assumed a yellowish or buff tint. Mr. Turner, bred specimens of *Boarmia roboraria*, Schiff., and stated that he only successfully hybernated two larvæ, although they apparently did well till the early part of March. Mr. Adkin gave his experience of twenty-five larvæ sleeved on oak in his garden last autumn, and which in due course attached themselves to the twigs for hybernation. All went well till the middle of December, when the heavy gales dislodged them; and although they gradually regained their position, taking advantage of occasional mild days to do so, they did not appear to thrive afterwards, were restless, and did not take to their food well as the spring advanced. Mr. Turner's exhibit included *Apamea ophiogramma*, Esp., and a bleached variety of *Epinephele ianira*, L., from Leigh, Essex; he said that several specimens of this form had been taken in the Leigh district within the last few years. Mr. Allbuury, a lengthy series of *Colias edusa*, Fb., some remarkably fine specimens of the var. *helice*, Hb., *Deiopeia pulchella*, L.; also two bred specimens of *Vanessa urticae*, L., in one of which all the normal red colour was entirely replaced by a beautiful bright yellow, and was very much admired. Mr. Nussey showed a box of most interesting varieties,—*Lycæna bellargus*, Rott., and *icarus*, Rott.,—with the spots on the under side developed into broad streaks; *Polyommatus phlæas*, L., in which one specimen had only the central spot on the fore wing, and another with the hind wings of a dark fulvous brown; also a banded specimen of *Argynnis euphrosyne*, L., and the pallid form of *Colias edusa* var. *helice*, Hb. Mr. Hawes related his experience of collecting at Felixstowe and Folkestone during the middle of August, and reported the continued abundance of *Colias* and *Vanessa*, whilst *Pieris rapæ* and *brassicæ* were by hundreds on thistle-heads. At Folkestone he stated it was painfully evident that *edusa* and *hyale* had been hunted down by the schoolboys, who prowl about the Warren Hills at this time of the year from early morning till late afternoon. Mr. South, on behalf of Mr. Burkill, exhibited two well-executed coloured drawings of varieties of *Smerinthus tilia*, L.:—No. 1 represented an insect with pale brown fore wings, marked with reddish spots of the usual shape; hind wings fuscous grey-brown, with some irregular darker markings; and body of the same colour as fore wings. No. 2 represented an insect with greenish white wings, with the usual central markings dark green, and some touches of an intermediate shade of green between the central band and the base of the wing, and on the outer third of the wing; hind wings fuscous brown, outer and abdominal margins paler, the former edged with blackish, and the body of the intermediate green of fore wings. Mr. Adkin enquired if all the species of *Pieris* were well represented this season, as he had not seen *napi*. *Pieris brassicæ*, he observed, was in abundance, *rapæ* not quite so numerous, and *napi* exceedingly scarce. Mr. Tutt remarked that his son had met with the latter species freely, quite recently; and Mr. South said he still had a living pupa which had been in that stage for three months.

September 8th.—Mr. J. Jenner Weir, Vice-President, in the chair. Mr. Mark Winkley exhibited a beautiful variety of *Catocala nupta*, L., with the normal red colour of the hind wings pale brown, shot with



purple. Mr. Frohawk, *Satyrus semele*, L., bred from ova deposited by a female captured in the New Forest; one female with under side suffused. Mr. Fenn, a long series of *Cidaria truncata*, Hufn., bred from a female taken at Chattenden, and showing three distinct forms; also a female *Colias edusa*, Fb., with a broad black band, and another with faint yellow dots on the band. Mr. Tugwell exhibited *Spilosoma lubricipeda*, Esp., var. *radiata*, with the Yorkshire parents, and stated they had only been in pupa three weeks. Mr. H. Moore brought a box of grasshoppers collected in Spain, which included the blue form of *Ædipoda fasciata*. Mr. Carpenter, a specimen of *Sirex juvencus* taken in Belsize Park. Mr. S. Stevens, a new species of *Botys*, taken at Totland Bay in June last, allied to *fuscalis*; also typical *fuscalis* and *terrealis* for comparison. Mr. J. Jenner Weir exhibited specimens of *Vanessa cardui*, L., which he had reared from larvæ collected in July last at Westgate; the chrysalids, immediately after metamorphosis, had been subjected to a temperature of 57° Fahr., which was steadily maintained both day and night, and the result was that the imagines which emerged were all much darker than usual. This was brought about by the black occupying an extended area, and the row of five spots on the hind wings being not only increased in size, but often confluent. He also exhibited a specimen of *Epinephele ianira*, L., taken at Westgate, which had a well-defined ocellus on the upper side of the hind wings. Mr. Frohawk stated that he had never noticed an ocellus in this species on the hind wings before. Mr. Manger, a Longicorn taken fifty miles at sea off Borneo, and said it would be interesting to know how they carried their antennæ in flight; also *Vanessa cardui*, L., taken at sea thirty miles from Algiers; and a *Cicada*, twenty-five miles off Pointe-de-galle, Ceylon. Mr. Frohawk showed a species of gnat taken from the neck of a collie, and remarked upon the abundance of this insect at Chattenden. Mr. West (Greenwich) stated it was the same species which was a regular pest at Plumstead. Mr. Step also related his experience with this insect at Ashtead, which had stung him on the hands during his rambles, and immediately caused a painful swelling, which took some few days to reduce. Mr. Step exhibited two species of sea-anemones (*Tealia crassicornis*, Müller, and *Actinia mesembryanthemum*, Ellis), and made remarks thereon. Mr. Weir said he had kept an unhealthy-looking specimen, when taken, for twenty-one years.—H. W. BARKER and A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—September 12th, 1892.—Mr. G. H. Kenrick, V.-P., in the chair. The following were exhibited:—By Mr. Neville Chamberlain, a boxful of Lepidoptera, which he had recently collected in Inverness-shire. Mr. P. W. Abbott, a very long series of *Colias edusa*, collected at Freshwater, Isle of Wight, including half a dozen of the var. *helice*, and one specimen intermediate between the variety and the type. Mr. W. Harrison, two local specimens of *C. edusa*, also larvæ of *Sphinx ligustri*, taken at Trench Woods. Mr. R. C. Bradley, *Zygæna trifolii* var. *confluens*, and one specimen of *Emmelesia tæniata*; both from Barmouth. Mr. G. H. Kenrick, *Plusia bractea*, from Scotland; and *Euperia fulvago*, from Cannock Chase and Sherwood Forest. Mr. Colbran J. Wainwright read a paper entitled "Isolation as a Factor in the

Evolution of Species," in which he pointed out the great effect which isolation had indirectly in assisting divergence from types, and also endeavoured to prove that directly it had a decided effect in producing divergence, contrary to Wallace's opinion, although that effect might be small, and at most able to produce species, not genera.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*Sept. 12th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. F. N. Pierce, F.E.S., read a paper entitled "Some further researches upon the genital structure of Lepidoptera." The author described the different species in the genera *Acronycta*, *Agrotis*, *Noctua*, &c., and showed that in cases where the identity or otherwise of species was disputed the genitalia might often be used as a sure means of differentiation. The paper was illustrated by the author's preparations of these parts thrown upon a screen by the aid of the oxyhydrogen micro lantern, and by photographs and specimens of each species described. The President exhibited varieties of *Angerona prunaria*. Messrs. Gregson and Robson, challenge series of *Abraxas grossulariata*, showing variation produced by food. Mr. Scowcroft, varieties of *Xanthia cerago*. Mr. William Johnson, a fine variety of *Vanessa urticae*, which had the ground colour very pale; *Bombyx rubi*, with the bands absent; and *Orgyia fascelina*, with a mass of dark scales near the centre of the costa of the fore wings. Mr. Prince, varieties of *Abraxas grossulariata*; and a specimen of *Colias edusa* nearly the variety *helice*, captured at Wallasey. Mr. Harker, *C. edusa* from Crosby. Mr. Crabtree, a long series of *C. edusa*, captured at Sidmouth, S. Devon, who remarked that he had only taken one var. *helice* among fifty-six *edusa*.—F. N. PIERCE, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—*August 10th, 1892.*—Mr. J. Hawkins exhibited imagines of *Apamea unanimitis*, *Hadena dentina*, *Bupalus piniaria*, including a very dark specimen of the latter, and one with ground colour yellow instead of white, from York; also living larvæ of *Acronycta leporina*, *A. menyanthidis*, *Eriogaster lanestris*, *Spilosoma menthastri*, *Panolis piniperda*, and *Acidalia remutata*, from York. Mr. W. Hawkins, *Acidalia scutulata*, *Lithosia mesomella*, and fine varieties of *Abraxas grossulariata* (bred). Mr. R. Dutton, *Cymatophora duplaris*, *Cidaria silaceata* (bred), *Ellopia fasciaria*, pale form of *Abraxas ulmata* (bred) from Doncaster, a long and fine series of *Epione vespertaria* (bred), *Epinephele hyperanthus* (minus rings), and varieties of *A. grossulariata* (bred), from York. Mr. W. Hewett, *Tentocampa gothica* var., *Demas coryli*, &c., from Burnharvie; a peculiar variety of *Asthena blomeri* from Sledmere, Yorks.; *Larentia cæsiata* from Coxwold, Yorks.; a beautiful pink-bordered variety of *Epione vespertaria* from York; *Zygæna lonicerae* var. *semilutescens*, and two specimens with the five spots confluent (bred this season), from York; also *Spilosoma fuliginosa* var. *borealis*, bred from larvæ obtained near York. Referring to the latter, Mr. Hewett remarked that grey, brown, and black larvæ of this species had all produced one form. Living larvæ of *Acronycta alni* and *Papilio machaon* from Cambridgeshire were also exhibited.

*September 14th.*—Mr. S. Walker exhibited *Acronycta menyanthidis* (bred) from Darlington and Strensall Common, near York (one of the imagines from the last-named locality being very dark); *Triphæna subsequa*, taken by himself at sugar near Winchester, July 6th, 1892; *Notodonta*



*carmelita* (bred); a series of dark *Cleoceris viminalis*, bred from larvæ collected at Rokeby on Whit-Monday, 1892; *Aplecta herbida* and *A. tincta*, taken at sugar near Winchester, July 6th; *Luperina cespitis*, from Strensall Common, York; a bred series (from ova) of *Ennomos tiliaria* and *E. erosaria*; a bred example of *Anticlea sinuata*; two varieties of *Lobophora lobulata* and *L. hexapterata*, the latter being a very pretty form, with the central band of a pale ashy grey; both were taken this season near York. Mr. R. Dutton, *Geometra papilionaria*, taken early in August at Askham Bogs, York. Mr. W. Hewett, *Geometra papilionaria*, from Sandburn Common, York; bred specimens of *V. c-album* from Llandago; *Tephrosia consonaria* from Reading; *Epione apiciaria*, York; *Boarmia roboraria*, New Forest; *Ennomos alniaria* (bred), Kent; *Corycia taminata*, Challenden; *Selenia illustraria* (bred), Swansea; *Hydracia petasitis* (bred), pupæ dug at Greatham, Hartlepool; *Miana expolita*, Hartlepool; *Acronycta aceris*, Deal; *Agrotis pyrophila* (type), Aberdeen; *Aplecta tincta*, Keswick; *Erebia cassiope*, Barrowdale, near Keswick; *E. blandina*, Forres; *Cænonympha dorus*, Greenleighton Moss, Northumberland, and Benachie. Mr. G. C. Dennis, long series of *Agrotis corticea*, *A. tritici*, *A. præcox*, and *A. vestigialis*, recently taken by himself at St. Annes-on-the-Sea, Lancashire.—W. HEWETT, *Hon. Sec.*

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## REVIEWS.

*Elementary Text Book of Entomology.* By W. F. KIRBY, F.L.S., F.E.S. 2nd ed. Revised and augmented. Pp. 281; 87 pl. London: Swan Sonnenschein & Co. 1892.

WE are glad to see a second edition of this popular Introduction to Entomology. The work has already been favourably reviewed, and we have now nothing to add, beyond noting that some errors which had crept into the first edition have been carefully eliminated. The addition of a comprehensive Index to the work greatly enhances its value to the student.

*The Lepidoptera of Dorsetshire.* By C. W. DALE, F.E.S. 2nd ed. 8vo, pp. 76. Dorchester: Henry Ling. 1891.

THE first edition of this County List was published in 1886, and since that time no less than 130 additional species have been observed in Dorsetshire; of this number, 47 belong to the Gelechiidæ and Nepticulidæ alone. Altogether Mr. Dale enumerates 1432 species as found in the county; it is to be noted that only eight species of the Diurni seem to be absent. This list will be exceedingly useful, not only to those entomologists who may reside in or visit Dorsetshire, but to all who are interested in local faunæ.

*Butterflies of the Riviera.* By FRANK BROMILOW. 8vo, pp. 115. Nice: P. Conso & Co. 1892.

A VERY useful annotated list of the Butterflies of the Maritime Alps. The times of appearance of each species and localities where found are mentioned. In most instances the earlier stages are referred to, and the life-histories of many species are given. There is an Index of Species, Varieties, and Synonyms, and a list of the larval food-plants, with their English names.



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## PLUSIA MONETA BRED IN ENGLAND.

BY GERVASE F. MATHEW, F.L.S., F.E.S., &c.

FROM August 5th to September 16th I was staying at Frinsted Rectory with all my family, and during that time had frequent opportunities of collecting in the neighbourhood. Frinsted is prettily situated upon high ground about five miles from Sittingbourne, and commands extensive views of the surrounding country. On September 3rd I received the 'Entomologist,' where I read that *Plusia moneta* had again been captured at Tunbridge Wells, which, as the crow flies, is only about twenty-two miles from Frinsted. It was taken on July 13th, and another at Alton on the 12th; and as it is a double-brooded species, I thought at this time larvæ or pupæ might be found.

There were several large clumps of monkshood in the garden, so I went out at once, and on the very first plant I found a cocoon, spun up and quite exposed, upon the under side of a leaf. It was evidently a *Plusia* cocoon, was oval in shape, quite compact, and of a pale straw-colour—not a carelessly-made, flimsy thing like that of *P. gamma*, which has usually a deal of loose silk outside the cocoon, and, moreover, is generally enclosed in bits of its food-plant. Holding the cocoon up to the light, I could plainly perceive a *Plusia* pupa within, which, when the cocoon was touched, became very lively, and I felt convinced that what I held in my hand was no other than the cocoon of *P. moneta*, and of course was immensely pleased at my good fortune.

After this I searched all the other plants in the garden, but only found one more cocoon, which was of a slightly paler colour than the first, but just as compact, and containing a lively pupa. While looking for the cocoons I noticed several larvæ of *S. lubricipeda* and *H. oleracea* feeding upon the monkshood. The 3rd of September was a Saturday, and upon going into my dressing-room, at seven o'clock on Monday morning and looking into the box containing the two cocoons, I was delighted to see

that a *P. moneta* had just emerged. Its wings were small and crumpled, but by eight it had developed into a most lovely specimen. When at rest it sits very high upon its legs, and the long recurved palpi make it look very peculiar. Upon killing and setting it I found that its legs were very brittle and came off at the least touch.

After breakfast my governess and three elder children were sent to search the monkshood growing in the various cottage gardens in the neighbourhood, while I went farther off in another direction. A week's hunting produced five more cocoons, but I am sorry to say the moths had emerged from all of them—I was evidently a week or a fortnight too late. Nearly every night, until I left Frinsted, I watched the monkshood at dusk, and kept a bright light burning in one of the windows, but did not succeed in obtaining a perfect insect, though I have no doubt some were about. The nights during the latter part of our stay at Frinsted were cold and unfavourable for mothing, and sugaring was a complete failure. A couple of days before we left I beat two very small *Plusia* larvæ from monkshood, but whether they are *moneta* or *gamma* I cannot yet say; the latter was a perfect pest at night. The second moth, a most perfect specimen, emerged on the 13th.

H.M.S. 'Tyne,' Chatham, Sept. 19, 1892.

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## LIFE-HISTORY OF *CARTEROCEPHALUS PALÆMON*.

By F. W. FROHAWK, F.E.S.

(Concluded from p. 228.)

On October 3rd, one hundred and one days old; length the same as on Sept. 12th, but more robust, and the ground colour had changed to a very pale primrose-yellow, and the stripes of a slightly darker hue, the white lateral line showing clearly, and spiracles brownish; the head pale buff with a faint lilac tinge, with a black patch above the mouth and brownish at the sides, the black eye-spots and central line showing as before.

About the middle of October it prepared itself for hybernation by spinning two blades of grass together at the edges, so forming a tube, in which it remained perfectly motionless during the winter months; the two blades were united along one side, the other edges not quite meeting, but drawn round its body as close as possible, leaving a part of its dorsal surface exposed. In this enveloped state it remained absolutely quiescent from the middle of October until the 12th of March. During hybernation the colour had again changed, being on February 9th, 1892, a pale pearl-grey, and having a semitransparent appearance; the dorsal lines drab and clearly pronounced.

On March 12th it slightly advanced to the end of its hybernaculum, so that its head protruded. It so remained until March 21st, when it quitted its abode, and I then obtained another portrait of it; and upon again measuring it I found it had become less in length since it commenced hybernating, it then being (March 21st) three-quarters of an inch long; and the colour had also again changed to a delicate cream or very pale primrose, inclining to a pinkish hue, and the lines were pinky drab and very clearly defined, the subdorsal lines being separated by an almost pure white stripe; the head remained unaltered in colour. Since hybernation it did not feed at all, and generally remained quiet, lying along a grass-blade, which evidently was occasioned by the low temperature during the latter part of March.

April 1st, being warm and bright, I placed the plant in the sun, which soon revived the larva, as it began moving restlessly about, and soon began to spin the tips of the grass together. On the following day I noticed it remained in the same position all day, but at times moving its head from side to side, evidently still spinning more threads. On closely examining it on April 3rd, I found it in precisely the same position, but motionless, and prepared for pupation. It had drawn together with silk six blades of grass at the ends, forming a tent-like structure, and along the surface of one of the broadest a little carpet of silk was spun, upon which it rested with its head uppermost; a silk cord also encircled its body round the fourth segment.

On April 8th, at mid-day, it pupated. I observed it just in the act of casting the larval skin, which it quickly accomplished; by raising and curving its body it became detached from the shrivelled skin. When thus free it was only suspended by the cord around its middle, and then it at once began feeling for the silk on the grass with the anal segment (the larval skin still adhering to the silk) by lowering and curving the body over the slough until it reached the silk, when immediately some of the anal hooks anchored to it. It then remained quiet for about a minute, as if resting after its exertions, and then writhed itself to and fro, with evident labour, each time gradually pushing aside the slough, and again rested, which process it repeated several times, resting for about a minute between each effort, until it finally became quite firmly attached to the silk and the slough hanging by the side of the anal segment. The process of securing itself occupied about twenty minutes. The larva remained fixed for pupation at least five days. Altogether it was two hundred and eighty-nine days in the larval state. In three hours after pupation it assumed its final form and colour, having altered but very little in colour from the last coloration of the larva.

The pupa measures five-eighths of an inch in length, is fairly



cylindrical, but tapering to the anal segment. Dorsal view: the head is pointed in front in the form of a short conical beak; the eyes are rather prominent; the thorax is swollen in the middle, the widest part, and then gradually tapers towards the last segment, which is elongated and flattened. Lateral view: the beak is slightly upturned, the thorax convexed, and the segment next the thorax is rather swollen in the middle, so forming a rather decided depression at the base of the thorax, where the silken cord passes round; the body gradually tapering to the last segment, which terminates in a long compressed curved process furnished with long hooks; the wing-cases extend down two-thirds its length, and only very little, if at all, swollen; the antennæ and legs are but feebly modelled; the tongue is well defined, it is dusky at the base, blending into black at the apex; the colour is of a very pale primrose-yellow, shading into pearly grey, and semitransparent on the head, wings, and flap; a dark medio-dorsal line commences at the base of the beak and passes down the entire length, gradually fading off in the anal extremity; it is blackest on the head and first abdominal segment, and palest on the thorax, where it is light brown; there are two rust-red subdorsal lines, which run parallel from the base of the antennæ to the last segment; another similar line, united along the inner margin of the wing, passes over two spiracles, and then runs parallel with the subdorsal lines, passing just above the remaining five spiracles, which are indicated by brownish specks; at the base of the antennæ are two short and fine blackish streaks; the antennæ and wings are faintly outlined with dusky brown. In general appearance and colouring the pupa closely resembles a piece of dead, withered grass.

On May 16th the pupa began to change colour, the wings turning greyish and the eyes a deep pinkish purple, and finally became a dull leaden grey all over; and a female emerged on the 20th of May.

There is one thing worthy of mention in the habits of the larva—that is, it has the power of casting its excrement sideways with considerable force, as if propelled by a spring, sending it a foot or more, which undoubtedly is a means to prevent fouling its domicile.

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### CALLIMORPHA HERA.

By G. C. BIGNELL, F.E.S.

I THINK any brother entomologist, after reading what I have to say on the captures of *Callimorpha hera*, must of necessity admit that it has established itself in South Devon, about 120 specimens having been recorded, including those mentioned in this paper.

The first capture in South Devon was by Mr. D'Orville, on August 14th, 1871, at Alphington, near Exeter, recorded in the 'Entomologist,' vol. v. p. 414. I knew the gentleman very well, and often visited his garden in which *C. hera* was caught; it adjoined a large nursery, where imported plants in great quantities were received from the Continent; and I therefore considered at the time that the capture was an accidental importation among moss, &c., used in the packing of bulbs, remembering that the larvæ would then be very small, in the autumn or early spring, at the time of importation. A figure, with description, and record of previous captures, were published in vol. vi. pp. 33—36 and 239. Other captures are recorded, but as they do not relate to my subject I shall pass them over. Ten years after, notifications of captures are made almost annually, viz. :—

In vol. xiv. p. 227, Mr. Herbert states that he caught a specimen of *C. hera* on the 19th August, 1881, in the Teignmouth road, near Dawlish.

In vol. xvii. p. 233-4, Mr. Brooks records its capture in Devonshire, and says, "The exact locality I would rather not name." Subsequent information proves, without doubt, it was not far from Dawlish. This was in August, 1882, and two of the moths were obtained. The following year he caught three, and in 1884 five, at "a distance of fully three miles from where the specimens of *C. hera* were taken in the previous year."

In vol. xviii. p. 297, the same gentleman records the capture of two more (1885), and mentions, "A gentleman from London, staying at Dawlish, has succeeded in taking two others;" and at p. 317, Mr. Jäger mentions that he captured one and saw one; he "hunted the ground in company with a friend from London," but does not mention any capture made by his friend; it may be two, as mentioned by Mr. Brooks.

In vol. xix. p. 250, Mr. Jäger records seven specimens from Starcross, Dawlish, and Teignmouth. The first capture took place on the 19th August, which escaped, while trying to box it, out of his net (1886).

In vol. xx. p. 230, Mr. Kane mentions the capture of one at Exeter, 15th August, 1887; and at p. 274, Mr. Jäger favours us with a note of his captures—six, and two sent him after leaving Dawlish.

In vol. xxi. p. 258, Mr. Auld records the capture of one at Dawlish; and at p. 274, Mr. Cook, of three specimens (1888).

In 1889 we have none recorded; 1890 is also passed over without a notice.

In 1891, Major-General Carden captured seventeen in five days at Teignmouth. The same year the vicar of a small parish, within the *hera* radius, captured and had brought to him over thirty specimens, most of them in a very dilapidated condition, as many were caught by village lads and carried in their hands a

mile or more to the parson; but perhaps, after all, they would not have been served so badly as one I saw this year, which had been crammed into a small pill-box by a boy, the said box constructed only to carry six pills. This reminds me that a young gentleman, who is now a medical student, when a lad attending school made his first capture of *hera* in the Starcross district twelve or thirteen years ago; the exact date not recorded.

A few observations for 1892, after the above, may be of interest also. On the 8th August, Mr. Jäger made his first captures, namely, two specimens, and according to promise duly advised me of the same; unfortunately I could not leave home just then, but I joined him on the 12th. That day we did not make any captures. On the 13th, Mr. Jäger captured two, and I netted one and saw two others, after beating the hedges both sides of lanes, up one and down another, until we must have walked over ten miles. The following day the proceeding was repeated over new ground, and three specimens only were discovered, of which we caught one; this was very near Exeter. The next day we started again, and this time without a single capture; but we saw a lad who had one in good condition, safely resting in his killing-bottle.

The weather during the four days was very boisterous, with a strong inclination to rain, and little sun at very short intervals. The result of our labour was, therefore, so very inadequate that I returned home. Mr. Jäger remained in the locality for some days after. His total captures amounted to twelve, of which only one could be called a good cabinet specimen. The clergyman previously referred to has obtained several this year; the exact number I do not know; a few coming to light. He has also two bred from larvæ found by his gardener. A gentleman from London has also visited the locality, and "taken a small series" in the vicinity of Dawlish. By the foregoing we have records of captures of *hera* from Exeter to Teignmouth, at least thirteen miles as the crow flies, and over fifteen by rail.

We have it also recorded that two captures were made at Hazlewood, a small village on the river Avon; and I have myself reliable information of two specimens taken near Plymouth a few years since. In considering this question it should be remembered that during dull and damp weather, of which we generally get a preponderance at this time of the year, the moth is very sluggish, and seldom flies unless disturbed. This, I think, is the reason that so few have been captured. On the other hand, in bright and sunny weather *hera* flies so strongly, and uses its wings so freely, that it might be mistaken for a wasted *paphia*, as indeed I did at Exminster, and I should not have known otherwise if it had not alighted; but it was off again before I could place my net over it.

I think the above-named captures, extending over so many years, will go to prove that *C. hera* has established itself in South



Devon, and that very many more captures would have been made had we, during the past ten years, had more genial weather.

Stonehouse, Plymouth, Sept. 14, 1892.

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## OCNERIA DISPAR IN ENGLAND.

BY RICHARD SOUTH.

THE earliest figure of *Ocneria dispar* in any English work on Entomology is, I believe, that by Wilkes in his 'Twelve New Designs of English Butterflies,' published in 1742. The insect was again figured by Wilkes, who, by the way, called it the "Gypsy Moth," in 1773, and subsequently by Harris in the 'Aurelian's Pocket Companion,' 1775, and by Donovan somewhere about the year 1800. Stephens, in 1829 ('Illustrations of British Entomology, Haustellata,' ii. p. 56), describes the species under the name of *Hypogymna dispar*, and says of it, "not common in the neighbourhood of London; it has occasionally been taken at Coombe Wood, but in the fens of Huntingdonshire it appears to abound, and may be taken in all stages at one time, as the imago frequently appears long before all the larvæ have changed into pupæ. It is said to have been introduced into Britain by eggs imported by Mr. Collinson; but the abundance with which it occurs near Whittlesea, and the dissimilarity of the indigenous specimens (which are invariably paler, with stronger markings) to the foreign, sufficiently refutes the opinion."

Curtis, referring to this species ('British Entomology,' 1862), observes:—"At the time Donovan wrote these moths were so rare that he could not obtain British specimens to figure in his work; it is not easy therefore to conceive the delight I experienced, when a boy, on finding the locality of the Gypsy Moth. After a long walk I arrived at the extensive marshes at Horning, in Norfolk, having no other guide to the spot than the *Myrica gale*; and on finding the beds of that shrub, which grows freely there, the gaily-coloured caterpillars first caught my sight; they were in every stage of growth, some of them being as large as a swan's quill. I also soon discovered the moths, which are so totally different in colour as to make a tyro doubt their being legitimate partners. The large loose cocoons were likewise very visible, and on a diligent search I found bundles of the eggs, covered with fine down from the abdomen of the females."

Stainton ('Manual Brit. Butt. and Moths,' 1857) remarks, "This species is apparently less common here than formerly," and gives Halton in Bucks and Stowmarket as localities, but indicates that the occurrence of *O. dispar* in the latter place was not regular.

In 1870 entomologists seem to have been a little troubled about the right of *O. dispar* to be considered a British insect, referring, of course, to those larvæ or imagines which were then found at large. In the 'Entomologist' for that year the species is frequently mentioned. Mr. Tratman, of Bristol, found a small larva feeding on a plant of azalea, which had been brought into his house; this in due course produced a "splendid male, measuring two inches across the wings, and, besides being larger, was of a much richer and darker colour than the specimens usually seen in cabinets, bred 'in and in,' by collectors, from foreign insects" (p. 172). Mr. A. Davidson states that while passing, by coach, the side of Loch Mara, a larva of *O. dispar* fell from a tree on to his coat; and he considered that that fact should satisfactorily dispose of the question whether the species was indigenous or not (p. 213). Mr. Spiller records a male specimen captured in Butter Wood, near Odiham, and remarks, "It is both larger and darker than the bred specimens usually seen in collections" (p. 183). Mr. D. T. Britton reports larvæ "not uncommon on the straggling bushes of sloe, whitethorn, and wild rose" on the Essex marshes below Tilbury (p. 393). This statement is corroborated by Mr. R. W. Bowyer, who says that he found two larvæ "feeding on a rose tree" between Tilbury and Southend (p. 452).

Since the year last mentioned, records of captures of odd examples of the larva and imago in various places have been recorded from time to time, but it is perhaps unnecessary to refer to these in detail.

That *Ocneria dispar*, like its namesake, *Polyommatus dispar*, is extinct in Britain, there is, I think, no reasonable doubt; but when it became so we have no means of definitely ascertaining. This much, however, appears certain, that somewhere about the fourth decade of the present century the species began to decrease in numbers, and that towards the end of the "fifties" it had practically ceased to exist as a wildling in this country. *O. dispar* can now only be regarded as a semi-domesticated species in England, and complete degeneration of the stock, by the process known as "in-and-in breeding," is possibly averted by the periodical introduction of ova from the Continent.

There is not the least doubt that attempts have been made to re-establish the species in various parts of the country, but all these efforts appear to have failed. Probably most, or possibly all, of the larvæ and imagines found at large during the past forty years or so may have been the direct result of sundry "turning down" experiments.

As it does not seem possible to restock the country with *O. dispar* by what may be termed artificial means (which is perhaps fortunate for fruit-growers and other non-entomological members of the community), the inference would seem to be that

man had nothing to do with the introduction of the original stock into England. We know that the species has been abundant in the fen-lands, but we do not know whether it was always common there. One would suppose that if *O. dispar* abounded in any part of England towards the close of the eighteenth century or beginning of the nineteenth, Donovan would hardly have found it necessary to figure a continental specimen. Of course, it is quite possible that, although specimens were found from time to time in various localities about the country, the headquarters of the species was not discovered until after Donovan had published his book. Probably we should not be far wrong if we adopted this view; but, on the other hand, it must be admitted that there is nothing in the published facts connected with the English history of the species which conclusively disproves the statement that the origin of *O. dispar* in this country was due to the introduction of foreign ova.

In conclusion, it may be mentioned that the recent destructive hordes of *O. dispar* in certain portions of the United States are believed to be the descendants of imported stock. It appears that in 1868 or 1869 a gentleman interested in sericulture received some *O. dispar* in one or other of its early stages, and that some of the moths, subsequently bred, escaped. In 1889 the species had attained such alarming numbers in the State of Massachusetts that the governor despatched a message to the legislature, and the result of this was that 50,000 dols. were voted in 1890 for the purpose of exterminating the "gipsy moth." A large force of men were engaged to examine the trees in the infested districts, and mark those upon which eggs had been deposited. Other men, armed with flaming torches, followed the inspectors, and burned the eggs. Later on, when the young larvæ appeared, from eggs which had escaped the keen eyes of the advance guard and the heat of the blazing brand, these were played on by some fifteen spraying machines charged with a solution of Paris-green. A little over 25,000 dols. was expended during 1890, and the balance was utilised in a renewal of the campaign in 1891; but, although the strength of the enemy seems to have been greatly reduced, he still maintains his hold upon certain districts in the State referred to above.

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## NOTES ON RHOPALOCERA FROM ITALY, &c.

BY FRANK B. NORRIS.

(Concluded from p. 241.)

*Lycæna damon*, Schiff.—Abundant, locally, on damp spots in pathways under Cima Car, and in Val Sestrera; July and throughout August. I could never succeed in finding a female.

*L. eumedon*, E.—Common on flowers in June and July.



*L. argiolus*, L.—Frequently seen all summer. A female, taken August 31st, had the broad black margin to fore wings, so excellently figured in Mr. Barrett's new work, with the addition of a border of black dots to hind wings, and a discoidal spot on upper surface of fore wings.

*L. semiargus*, Rott.—Common, June and July.

*L. minimus*, Fuessly.—Appeared in successive broods.

*L. cyllarus*, Rott.—Early in June; numerous.

*L. arion*, L.—Locally common in June and throughout July; chiefly the var. *obscura* of Professor Christ. Some specimens measured 1.75 inch in expanse of wings.

*L. euphemus*, Ab.—Very abundant in all the wet meadows around the Beinette springs. First seen July 13th.

*Nemeobius lucina*, L.—Common in Val Pesio during June.

*Libythea celtis*, E.—Two or three only seen of this rare insect, with its peculiar habit of settling like a dragonfly on the summit of a dead twig; July.

*Apatura iris*, L.—A few in lower valley in June; they looked smaller than English specimens.

*A. ilia*, Hb., var. *clytie*, Hb.—Frequent in roads in August. Twice I saw one dip like a swallow into a pool of water. Var. *metis*, Frr.—August 30th, below San Bartolomeo.

*Limenitis camilla*, F.—Not uncommon along the river throughout the summer.

*L. sibylla*, L.—Scarcer; July and beginning of August.

*Vanessa c-album*, L., *polychloros*, L., *urticæ*, L., *io*, L., *antiopa*, L., *atalanta*, L., and *cardui*, L.—All common.

*Melitæa cynthia*, Hb.—Abundant on all the higher green Alps of the district throughout July.

*M. didyma*, O.—Below Chiusa and near Beinette, July, in flowery meadows.

*M. cinxia*, L.—Common in June everywhere.

*M. phæbe*, Kn.—Very numerous throughout the entire lower valley in August.

*M. aurelia*, Nick.—Common on higher mountains; July. Var. *rhætica*, Frex.—On Cima Car; July 5th. Var. *britomartis*, As.—Not rare. Some specimens, at great elevations, were so small and dark as to correspond to *M. asteria*, Frr.

*M. parthenie*, Bkh.—Common in damp meadows; July and August.

*M. dictynna*, E.—Scarcer than the above.

*M. athalia*, Rott.—Abundant.

*M. deione*, Hb.—Near Beinette; July 18th.

*Argynnis paphia*, L.—Very common. Ab. *valesina*.—Not rare. Our old friend of the New Forest seemed particularly partial to the dwarf elder flowers. These flowers proved very attractive to a large number of insects.

*A. aglaia*, L.—Swarming all summer. I took a splendid variety with heavy black markings, some more than a quarter of an inch in diameter; the whole upper surface very satiny, and the under side differed much from the type.

*A. adippe*, L.—Abundant. Ab. *cleodoxa*, O.—Very frequently met with.

*A. niobe*, L.—Abundant in Val Marguareis at the end of July and through August. Abs. *eris*, Meig., and *pelopia*, Bkh.—Not rare.

*A. latonia*, L.—Everywhere all the summer.

*A. euphrosyne*, L.—Early in June.

*A. selene*, Schiff.—Common, locally, over damp spots in June at San Bartolomeo; and later a second brood appeared in meadows near Beinette, and in Val Pesio up to La Certosa, end of July and August.

*A. pales*, Schiff.—Very common on all higher Alps.

*A. anathusia*, E.—June and July, frequent to 4000 feet.

*A. dia*, L.—Two broods, the second appearing in August.

*A. daphne*, Schiff.—Abundant in upper valleys; often seen on flowers of upright elder.

*Melanargia galatea*, L.—Swarmed all the summer.

*Erebia epiphron*, Kn.—Common on all mountains over 5000 feet. First seen June 6th, and continued through July. Var. *cassiope*, F.—Also common. Ab. *nelamus*, Bdv.—Very scarce; July 6th.

*E. melampus*, E.—Not very common on Monte Mascarone, &c., in July.

*E. eriphyle*, Frr.—Occurred very abundantly at the head of the Val Arpi, in Val Marguareis, and under summit of Monte Costa Rossa, &c. First seen July 11th, flying over grassy slopes.

*E. stygne*, O.—Frequent on all mountains above 4000 feet.

*E. evias*, Godt.—Meadows from 2800 to 6000 feet; June and July.

*E. ceto*, Hb.—Very common at about 4000 feet.

*E. glacialis*, E., ab. *pluto*, E.—On exceedingly steep slopes, covered with rocky *débris*, on sides of Monte Faschia, from 7000 to 8000 feet; and at Gias del Ortiga. Females were of a slightly brownish tint, and very sheeny.

*E. lappona*, E.—Common at considerable elevations in July.

*E. tyndarus*, E.—Abundant in same localities as preceding through July and August. Males and females, nearly invariably, had apical eyes on upper surface of fore wings pupilled.

*E. gorge*, E.—Common during July on rocky slopes in higher valleys.

*E. gouante*, E.—Frequent in similar positions to preceding; very abundant on the Passo Babane, and in Val Marguareis in August.

*E. athiops*, E.—From 2500 to 4000 feet, in August. Some were of ab. *leucotania*.

*E. ligea*, L.—First seen July 15th; afterwards not uncommon in bushy places, up to 3000 feet.

*E. euryale*, E.—Abundant generally at higher elevations; but this and the preceding species frequently overlapped. Some specimens showed no trace of white streak or spot on under side; others were of ab. *adyte*, Hb.; and, again, others were without ocelli on under side of hind wings.

*Satyrus hermione*, L.—Frequent during July and August in lower valley.

*S. alcyone*, Schiff.—In higher shady places under Monte Bruseis in July.

*S. circe*, F.—In July and August, among chestnut trees above Chiusa.

*S. semele*, L.—Scarce in July near Chiusa.

*S. statilinus*, O.—At and above Chiusa from August 14th.

*S. actea*, E., var. *cordula*, Hb.—Very abundant at considerable elevations over grassy slopes and rocky places, also occasionally lower in Val Pesio; July and August. Females varied greatly in depth of colouring above and below.

*Pararge mæra*, L.—Abundant, in successive broods.

*P. hiera*, F.—Very local, in Vals Pesio and Arpi, in June; a second brood, by no means numerous, occurred late in August.

*P. megæra*, L.—Common.

*P. egeria*, L.—In shady lanes; rare, and nearly all of English type, *egerides*, Stgr.

*Epinephile hyperanthus*, L.—Very scarce; indeed one of the rarest butterflies of the district; in densely shaded spots in lower valley.

*E. janira*, L.—Abundant; occasionally a bleached form turned up in August.

*E. lycaon*, Rott.—First seen July 30th; very abundant from 2800 to 4500 feet.

*E. tithonus*, L.—Common in lower valley and around the Beinette district; July 18th and later. Females occasionally showed an anal eye on hind wings' upper surface.

*Cænonympha pamphilus*, L.—All through summer. Var. *lyllus*, E.—Not infrequent near Beinette.

*C. arcania*, L.—Exceedingly common; July and well into August.

*Spilothyrus alcea*, E., and *althæa*, Hb.—Both very numerous on damp spots in mountains. The tuft of hair on under surface of fore wings of the latter species was very conspicuous.

*Syrichthus carthami*, Hb.—Abundant throughout July, settling on damp spots in mountain paths.

*S. fritillum*, Hb., var. *alveus* and var. *serratulæ*, H.-S.—Common.

*S. andromedæ*, Wall.—Not at all rare in Val Marguareis at end of June.

*S. malvæ*, L.—generally distributed.

*S. sao*, Hb.—Frequent; settling on damp spots under Cima Car and Monte Bruseis in July and August. Other specimens, apparently belonging to var. *cirsii*, M. D., flying amongst mint in higher valleys; and probably var. *carlinæ* and *S. cacialiæ*. But these must be finally determined later on.

*Nisoniades tages*, L.—Several broods. One specimen of ab. *unicolor*, Frr.

*Hesperia thauamas*, E., *lineola*, O., *sylvanus*, E., and *comma*, L.—All common. Var. *catena*, Stgr., of last species, not rare, above 6000 feet.

*Ceterocephalus palæmon*, Pall.—Common, on damp spots and herbage near woods, in June.

The valley of the Pesio is about twelve miles long, and runs downwards to the north. It rises in limestone mountains of considerable height, the culminating point being Monte Marguareis, 8800 feet in altitude. The view from many summits of the Piedmont plain, backed by the alpine chain from Monte Viso to Monte Rosa, is grand in the extreme. Many lateral valleys join the main valley throughout its entire length, each with its torrent. The lower valley is very park-like, and this characteristic continues as far up as Certosa, the meadows bordering the river being shaded by fine old chestnuts, and quantities of poplars, willows, walnuts, and fruit trees, whilst the slopes are covered with chestnut forests. Higher up beech and pines take the place of the chestnuts; and there is a rich sprinkling of ash, wych-elms and limes, and a thick undergrowth of hazel and laburnums, which last make a brave show in June. The hotel of Certosa, situated eight miles up the valley at a height of 2800 feet, is a huge, but very charming, cloistered old building; it was formerly a



monastery, and was suppressed by Napoleon in 1802. Embowered amid fine timber, and with the sound of many waters ever about it, it is essentially a cool, tranquil spot to spend the summer in; the hotel is well managed and comfortable, and the charges moderate. A mile and a half below is the village of San Bartolomeo, with an excellent inn (the Donna Bianca), and at the end of the valley, where it debouches on the lowlands, is the town of Chiusa, 2000 feet above the sea. Beinette is the nearest railway station on the Cuneo-Mondovi line. The highest shade temperatures noticed were 72° Fahr. in June, 79° in July, 77° in August, and now, in September, the maximum is about 70° Fahr. At night it rarely fell below 59°. Throughout the whole summer there was never a day when one could not go out with a fair prospect of taking something, for rain fell rarely, and chiefly at night. Botanically it is especially rich, and among many good things I may mention the rare yellow variety of *Fritillaria delphinensis*, *Saxifraga pedemontana*, *Silene cordifolia*, *Aconitum anthora*, *Asplenium fissum*, and *Ranunculus laceras*; this plant was discovered by Professor Billardi, of Turin, in 1793, and, although much sought for, it remained a lost plant until 1890, when a friend of mine rediscovered it, and this summer I was fortunate enough to find it in several new localities. *Zygæne* were common in great variety, as were dragonflies; and a Genoese professor, who was collecting Coleoptera, told me that this is a wonderfully rich district, and that he had found some beetles new to science here.

During the second week in June I made an excursion to the Isonzothal, in hopes of finding *Neptis aceris*, in which quest I was unsuccessful. However, *Argynnis hecate*, E., appeared a little way up the valley; *Erebia nerine*, Frr., near Tolmein, June 12th; *Pararge hiera*, Fr., and *Cyclopides morpheus*, Pall., between Gorizia and Canale, at a point below the road where springs run into the Isonzo. *Carterocephalus palæmon*, Pall., and *Lycæna orion* were common on Monte Metajur, thirty miles up the river. It is a lovely village, with its turquoise-blue river; and the botany is very interesting, *Saxifraga petræa*, *S. tenella*, and *Lilium carniolicum*, &c., occurring in the Caporetto district.

Later in June I drove over the Col Argentera to Barcelonnette, thence to Digne by Prunieres, and back *viâ* St. André to Allos, and by the new road over the Col D'Allos to Barcelonnette, whence by road to the Val Pesio—a delightful entomological tour through lovely country. The most notable butterflies taken were:—

*Papilio alexanor*, E.—Rather common eight miles from Prunieres; also, here and there, between St. André and Allos; and common at Digne.

*Parnassius delius*, E.—A little way above Vinadio.

*Euchloë eupheno*, L., var. *euphenoides*, Stg.—Several specimens on July 2nd at Barcelonnette, which seems very late.

*Thecla acaciæ*, F.—Near Condamine, June 24th ; and at Barcelonnette, July 1st. This always seems a rare insect, and by no means numerous where it occurs.

*Lycæna sebrus*, Bdv.—Above Barcelonnette, July 3rd.

*L. eros*, O.—Close by Lake Allos, and on the Col D'Allos ; July 2nd.

*L. meleager* ab. *stevani*, Fr.—A pair on June 28th above Digne, on slopes of Mont Cousson.

*L. admetus* var. *ripperti*, Frr.—Two specimens on blossoms of lavender, near Digne.

*L. damon*, Schiff.—Abundant at Barcelonnette, and Allos ; but I found no females.

*Melitæa cynthia*, Hb.—Not rare ; high up, near Allos.

*Argynnis ino*, E.—Common at Godessart, above Barcelonnette, on July 3rd.

*Melanargia galatea*, L., var. *leucomelas*, E.—Above Digne ; June 27th.

*Erebia glacialis*, E., var. *alecto*, Hb., and ab. *pluto*, E.—Common on rocky slopes above Godessart, Barcelonnette, July 3rd. This insect seems to be of an inquisitive disposition, which is fortunate, for it is impossible to move at more than a snail's pace on the difficult places it haunts. My net is made of black lisse, and by standing still and allowing it to blow in the wind I found the *Erebiæ* attracted thereto, and I was thus able to take a good series, often having several round me whilst I was pinning one.

*E. gorge*, E., var. *erynis*, E.—With the preceding, not uncommonly.

*Satyrus circe*, F.—Very frequent near Digne ; as was *S. hermione*, L.

*Cænonympha iphis*, Schiff.—Common in larch woods, above Allos, on July 1st ; and at Barcelonnette.

*C. arcania* var. *darwiniana*.—Frequently met with in larch woods, above Barcelonnette, on July 2nd.

*C. doras*, E.—Between Barcelonnette and Prunieres, common, June 25th ; also near Digne.

*Spilothyrus lavateræ*, E.—Eight miles from Prunieres, abundant ; also near Digne.

*Syrichthus fritillum*, Hb., var. *carlinæ*, Rbr.—At the lagodella Madalena.

The sun's heat at Digne, on one or two days, was really dangerous, the shade temperature being about 95° Fahr., and I was glad to leave the hot stuffy town and the barren waterless mountains for higher ground. Among plants there I noticed *Senecio doria*, *Leuzea conifera*, and quantities of *Catananche cærulea* ; also *Glaucium phœnicia*. I regret that I was too late for *Thecla roboris*, *Lycæna iolas*, and *Erebia epistygne*, but it appears this has been an unusually early year at Digne.

On returning from Gorizia I stayed one night at Turin, and as the train arrived early in the afternoon I drove over to Veneria, and in the half hour an impending thunderstorm allowed, I succeeded in taking in the wet meadows of the park several *Cænonympha ædipus*, F. ; also *Thecla ilicis*, E., var. *æsculi*, O., on flowers of the watercress. *Vanessa polychloros*, L., was common, and on the way out *Apatura ilia* var. *clytie* frequently settled on the road.

I fear I have greatly trespassed on your space and your readers' patience, but I should like to ask, in conclusion, if any of the readers of the 'Entomologist' can furnish, from personal experience, localities and time of appearance for *Neptis aceris* towards its western limits. Perhaps there is only one brood (the autumn one) in Western Europe; but to attempt collecting in such a spot as the Isonzothal, in August, would be almost impossible, in such a year as this, when the thermometer has registered in that district  $110\frac{1}{2}^{\circ}$  Fahr. in the shade.

Certosa di Pesio, Sept. 5, 1892.

NOTES ON VARIOUS SPECIES OF SATURNIIDÆ, &c.,  
BELONGING TO THE GENERA *PHILOSAMIA*,  
*BUNÆA*, *ANTHERÆA*, *GYNANISA*, *ANTOMERIS*,  
AND *CARTHÆA*.

By W. F. KIRBY, F.L.S., F.E.S., Assistant in Zool. Dept., British Museum, S. Kensington.

Genus *PHILOSAMIA*, Grote.

*Attacus cumingii*, Hutton, and *A. vesta*, Walk., are two doubtful forms belonging to this genus. They have never been described, and should be erased from our lists.

Genus *BUNÆA*, Hübn.

*Bunæa irius*, Fabr.

This insect is said to come from India, but it was described from Francillon's collection, and, notwithstanding the usual accuracy of Fabricius in the matter of localities, was more probably a species from Sierra Leone, obtained from Smeathman. The description appears to indicate an insect allied to *Bunæa tyrrhena*, Westw., but larger.

Genus *ANTHERÆA*, Hübn.

*Antheræa paphia*, Linn. (*dione*, Fabr.; *simplicia*, M. & W.)

There is little doubt that Linné in his successive works con-founded three species under the name of *paphia*, viz., *dione*, Fabr., *mylitta*, Drury (or some closely-allied form), and *polyphemus*, Cram. As, however, he quotes Petiver's figure of *A. dione* (Pet. Gaz. t. 20, f. 3) as typical, in both the 10th and 12th editions of his 'Systema Naturæ,' referring to a figure of Catesby's with doubt, Petiver's species must be regarded as typical, although in the 'Museum Ulricæ' Catesby's figure, with the locality, North America, is given as typical, and is conjoined with a figure of Rumphius', which is again quoted, with the additional locality Asia, in the 12th edition of the 'Systema.'



Aurivillius, however (Vet. Akad. Hand. (2) xix. (5) p. 148), figures a species from Amboina allied to *A. frithi*, Moore, from a specimen still existing in the Swedish museum, as the type; but I do not think this should set aside the original reference to Petiver, and the locality given, especially as Linné clearly indicates that he had more than one species before him when drawing up his detailed description in the 'Museum Ulricæ.'

*Antheræa simplicia*, Maass. & Weym., erroneously reputed to be an Indian species, was afterwards placed by the authors themselves as a synonym of *A. dione*.

*Antheræa hübneri*, Kirb.

*Antheræa hübneri*, Kirb., Trans. Ent. Soc. Lond. 1877, p. 20.

Except in colour, this species appears to be most nearly allied to *A. menippe*, Westw.

The following species, which appear in certain lists, have never been described, and are to be expunged from our lists:—*A. mezankooria*, *A. nebulosa*, and *Loepa swalica*.

Genus GYNANISA, Walk.

*Gynanisa isis*, Westw.

This species, probably from West Africa, is unique in the Museum of Science and Art at Dublin. It is usually considered to be a variety of the common South African *G. maia*, Klug, but the latter insect varies very little, and I have never seen a specimen at all resembling *G. isis*. Westwood's figure of the latter species is very characteristic (one of the best figures of moths in Jardine's 'Naturalist's Library'); and I am glad to take the present opportunity of publishing a detailed description of the original specimen, which I drew up some time ago:—

Exp. al., 144 millim.

*Female*.—Head and antennæ brown, a white spot beneath the scape of each antenna; thorax reddish brown, a narrow white stripe in front of the prothorax, and a broader one behind; abdomen yellowish grey. Front legs very short and shaggy. brown above and whitish beneath; the base of the tibiæ and the first joint of the tarsi also white. The wings pale grey, very coarsely scaled and speckled with brownish, a brown W-shaped band halfway between the base and the eye, which is black, irregularly oval, and its outer half filled with an irregular triangular space; beyond this run two oblique stripes from the costa to the inner margin, the first reddish brown, nearly straight, just beyond the eye, and the second dark brown, festooned; beyond this there are two broader suffused stripes before the hind margin, the innermost narrowest and least distinct; the outermost darker, broader, and slightly festooned; a dark festooned line precedes the dentated hind margin. Hind wings pink towards the base, followed by a very large eye formed of a black pupil, marked with bluish white towards its lower edge, surrounded with concentric rings of yellowish, black, buff, pinkish white, rusty red, and brown, the basal portion of the brown ring paler; outside this is a rather broad buff submarginal band, and then a brown white-speckled space extending to the hind margin. Under surface of both wings whitish grey, speckled with brown towards the margins; fore wings with the eye as

above, followed by two festooned darker bands; the innermost touches the eye, and is much expanded on the inner margin, where it touches a vinous blotch extending towards the base; the outer line is narrower and more festooned, but likewise of a rusty brown; the lowest crescent is the widest; beyond this is a third broader but obsolete dusky transverse band. On the hind wings the eye is reduced to a moderate-sized oval with a black centre, a yellowish inner and a black outer ring; the second zigzag rufous line of the fore wings is continued across the hind wings, and touches the outside of the eye; beyond it is a distinct but narrow zigzag brown line, and indistinct traces of a brown band between this and the hind margin.

*Gynanisa maia* is a much darker insect in both sexes, and usually rather smaller. Apart from colour-differences, the two bands beyond the cell are much wider apart (which is best seen on the under surface), and the inner band of the hind wings strikes the middle of the ocellus instead of touching its outer extremity. The specimen of *G. isis* may be slightly faded, but I think not to any appreciable extent.

#### Genus ANTOMERIS, Hübn.

*Antomeris janus*, Cram. (*metzli*, Sallé.)

All the specimens in the British Museum differ from the figures of *janus*, Cram., and *metzli*, Sallé, which are considered to represent varieties of the same species, by the red band of the posterior wings being more or less discontinuous on the lower part of the inner margin, instead of uniting with the submarginal red band.

#### Genus CARTHÆA, Walk.

*Carthæa saturnioides*, Walk.

This curious Australian species has considerable resemblance to some Noctuæ, with which Walker originally placed it. It has since been referred to the Saturnioidæ; but its long palpi will hardly permit of its being permanently retained in that family. Mr. Hampson has suggested to me that it is allied to *eupterote*; but for my own part I prefer to await the discovery of the larva before pronouncing any decided opinion as to its real affinities.

### OBSERVATIONS ON EMYDIA CRIBRUM.

By J. H. FOWLER.

THIS favourite little insect was first discovered by the late Mr. Dale some forty years ago, near the village of Parley, in Dorsetshire; and doubtless ere now most lepidopterists have a series to grace their family of Lithosiidæ.

Newman and Kirby both state that it is found in Hampshire; the former says in Dorsetshire also. Both are right, as it haunts the borders of each county. Stainton's 'Manual' gives Blandford

and the New Forest as localities, which I think decidedly wrong; I have a fair knowledge of each, but have never seen a specimen in either. It would be interesting to know whether it still exists in either of these localities. The former does not look at all a likely place, whilst the latter in many districts is similar to the present hunting-grounds.

Hundreds of acres of heaths around St. Leonards, where most collectors found *E. cribrum*, have been entirely destroyed by fire. These great fires are very weird, but grand at night; sometimes four and more are burning at once around here, the flames shooting up thirty and forty feet high. Undoubtedly they are caused by the commoners, as afterwards for a few years there is a good growth of bright green grass; but it will be many years before the heather is sufficiently grown again for *E. cribrum* to frequent.

In future I advise collectors to work from the village of Verwood, to within two miles of Ringwood, upon the heaths each side of the road, especially all around some old barrows, which are very conspicuous. I believe there are some good spots in the direction of Christchurch.

The species has been very scarce this season. I first collected upon the 8th of June, and netted thirteen, some worn, and a few days after eleven more; but by the end of the month it was almost over. Fortunately I obtained several females, one quite fresh and very fine, which kindly deposited ninety-seven ova, and all were fertile; I was quite surprised at the number.

The ova were laid on the 20th of June, upon a twig of *Caluna vulgaris*, in a pill-box, closely, in fact exactly, similar to the manner in which *Bombyx rubi* oviposits. They were most beautiful objects; in shape round, flattened at the base, and very large; colour brilliant pearly gold, changing to a rich purple after the fourth day, but retaining the pearly gloss until, and even after, the larvæ had hatched. Upon the 7th July the larvæ began to emerge, and continued to up to the 13th. The egg-shell formed the first meal, every scrap of which was devoured. Afterwards I had no difficulty in inducing them to eat either lettuce-leaves or groundsel; the former was preferred.

When first hatched the larva is pale brownish grey, hairy, slightly tufted; head jet-black. About the twelfth day the first skin is cast, when it becomes much darker, and after the second moult almost black; but as it grows the colours become visible, pale along the back between two rows of dark hairs, lateral stripes distinctly reddish, also between rows of hairs; under side dirty grey. Looking at the larva lengthwise, the hairs are tipped with grey. The larvæ have changed a third skin, but have not altered in appearance, and are now hybernating, thus proving that *E. cribrum* is not double-brooded, as many entomologists think.

The imago, as far as I have observed, has only one distinct



variety; it is unicolorous dark grey, with the nervules upon the superior wings paler. It is rare. The type has several shades of ground colour, but the two black streaks and four rows of spots, or interrupted bands, are most constant. A series of fifty, picked from quite 200, exhibits the following variation:—

*Males*. — 1. Ground colour nearly white, with indistinct markings; hind wings pale in central area, darker towards hind margins. 2. Ground colour almost black; nervules white, spots banded; hind wings dark. 3. Ground colour white and silvery, markings very distinct; hind wings pale. 4. Ground colour yellowish brown, markings always ill-defined; hind wings paler in central area. 5. Ground colour smoky and brownish; very scarce. The fringes in all cases are pale grey and unspotted.

The females are seldom so strongly marked as the males; they are larger, as a rule, and frequently granulated with dark grey scales, the spots being almost absent; the hind wings very dark, and without the central area being paler; but in a few specimens there is a pale dash running from near the anal angle towards the base, similar to *Lithosia mesomella*, although much finer.

From the above jottings it will be observed that *E. cribrum* ranges from almost white to black, with the addition of a brown form.

Ringwood, September, 1892.

## ON THE EARLIER STAGES OF *COLIAS HYALE*.

By F. W. FROHAWK, F.E.S.

On September 5th last I had the gratification of receiving a few ova of *C. hyale*, which Mr. R. Adkin most kindly sent me, with the information that they were deposited about Aug. 29th, by a female taken at Folkestone on the day previous; he has since also presented me with the parent, which is of the pale form. The eggs duly hatched, when I at once placed the young larvæ on a growing plant of Dutch clover (*Trifolium repens*), upon which they are still feeding. I therefore hope to be fortunate in rearing them to perfection, and able to report on the full life-history, as I believe *C. hyale* has been seldom bred in this country, and, so far as I am aware, its complete life-history is not published in any British work. Both the egg and young larva greatly resemble those of *C. edusa*; the chief differences are as follows:—

*Egg*.—The spaces between the keels are flat in *C. hyale* and are concave in *C. edusa*, the transverse ribs numbering about forty-six in *hyale* and about thirty-six in *edusa*; the colour is paler in *hyale*, especially at the ends.

*Larva*.—Anal segment: first subdorsal pair of tubercles shorter and set rather wider apart than those of *edusa*; the dark colouring above is smoky and suffused in *hyale*, which in *edusa* is sharply defined, angular and black; the general ground-colour of *hyale* is greener and darker than that of *edusa*. The main difference between the two species is not apparent until after the first moult, when the larva of *hyale* is covered with short blackish hair, *edusa* in the same stage being clothed with fine whitish pubescence.

The ova are deposited singly in an erect position, with the base terminating in a bulbous patch of glutinous substance firmly adhering to the leaf. The ovum is one-twenty-fourth of an inch high; the greatest diameter is about one-third its height; in form it is elongate-ovate, attenuating at both ends, which are rounded; just below the summit it is very slightly concaved; there are from nineteen to twenty-two longitudinal keels, mostly running the entire length, but some originating at different intervals from near the summit to about one-third down; the spaces between the keels have a flattened surface, and are most delicately but irregularly ribbed transversely by about forty-six in number. The colour, when first laid, is a pearly yellowish white, which gradually deepens in colour; when three days' old the summit is transparent, white and glassy, shading into yellow for one-fifth down, where it deepens into clear rosy orange, which colour prevails over the whole of the median area, occupying three-fifths; the basal fifth is pale, similar to the crown, but not so transparent; the colouring thus remains unchanged until about thirty hours before hatching, when it gradually becomes deeper, and finally turns to a purplish leaden colour, rather opaque; the shell has a very glittering, silvery appearance, and is exceedingly delicate.

I am also indebted to Mr. F. W. Hawes for ova given me on September 22nd, which were deposited on the 20th. Thereby I have been enabled to note the change in colour from the beginning. He informs me they were precisely similar in colour, when first laid, to those of *C. edusa*.

The first two eggs of those laid on August 29th hatched on September the 8th; the remainder hatched the next day, the egg-stage occupying about ten days.

The larva makes its exit by eating a hole in the shell at the side near the crown. Soon after emergence it sometimes eats a portion of the shell. Directly after it emerges it measures one-sixteenth of an inch in length; the body appears to be perfectly cylindrical; the segments are transversely wrinkled, and the whole surface of the body is very finely granulated, each granule or wart being extremely minute and black; the ground colour is ochreous yellow; the black warts are so densely sprinkled over the surface that the larva appears of a dull olive hue; the head is

black, granular, and somewhat shining; both the head and body are beset with a number of short, club-shaped tubercles, which are particularly glassy and white; they are shortest and stoutest on the head and along the subdorsal surface of the body, excepting those on the first and last segments, where they are longest and finest, especially the last pair on the anal segment, which are hair-like; those forming the subdorsal series are very short and pyriform; the legs are whitish and semitransparent; the claspers are the same colour as the body.

When quite young it feeds on the upper cuticle of the leaf, close to the midrib, and after each meal it returns to the midrib, along which it rests in a stright position, with its head furthest from the spot where it feeds; it is very sluggish in its movements.

When a few days old it eats through the leaf, completely perforating it. At ten days old, and before moulting, it measures one-eighth of an inch long, and is of a pale ochreous tinged with green and rather shining. The first one fixed itself for moulting on the 18th September, by spinning a layer of silk along the midrib, and thereon remained until it moulted for the first time, on the 21st September.

After the first moult the colour is olive-green, with subdorsal longitudinal lines of pale whitish green, which is principally composed of a series of warts, which also run in oblique short lines along the side; there is also a whitish lateral line, and a number of tiny pale warts which are sprinkled over the body and head, all emitting rather short blackish hairs, those on the first segment being the longest and curved forwards; the head is olive-green mottled with dark olive-brown. Its first meal, after moulting, consisted of a portion of its cast skin.

On Sept. 25th, when seventeen days old, it measured, while at rest, three-sixteenths of an inch; the colour was then of a greyish or smoky-green, with a rather dark medio-dorsal stripe, and an indistinct, pale, subdorsal line, chiefly composed of pale warts, as previously mentioned; the body is smoother than when before described; the hairs are black. It feeds by generally beginning at the end of the leaflet.

The second moult took place on Oct. 3rd. Very soon after, and before feeding, it measured one-sixth of an inch; the head very pale green, and the body clover-green, the segments deeply wrinkled transversely, the whole body and head being densely studded with pale greenish white warts, each having a black centre and emitting a black bristle, giving the larva a very dark or blackish green appearance; the warts are situated very close together, and principally run in longitudinal rows, indicating pale subdorsal lines; there is a whitish green lateral stripe; the under surface appears rather darker smoky green than the upper



surface; the head gradually becomes duller, and finally assumes an ochreous or olive-green.

On the 13th October, and thirty-five days old, it measured one-fourth of an inch long; the body almost cylindrical, being slightly dilated along the lateral line, and rather attenuating to the anal extremity; the second and third segments are stoutest; the colour is of a deep clover-green; the segments are clearly defined, and have each five or six transverse wrinkles, each wrinkle bearing a number of pale shining warts with a black centre, and each emitting a moderately long black bristle; the warts are placed in longitudinal rows down the dorsal surface; there is a pale yellowish white superspiracular stripe; the spiracles are black, and situated along the lower edge of the stripe; the head is pale ochreous green, and, like the body, is studded with black centred warts, and black hairs curving forwards; the legs are dusky; and the claspers green; the anal flap has a central blackish blotch. It rests in a straight position, but upon any disturbance it elevates the anterior half of its body, and remains in a curved attitude for a few minutes, and then attains its former posture. It feeds principally by day, preferring the sunshine.

On 18th October the larvæ evidently entered into hybernation, having remained quietly resting upon a layer of silk spun down the centre of the leaflet, until placing them in a temperature of 73° in the sun on the 23rd, when, after about an hour, two became somewhat restless, and slowly moved on to the adjoining leaflets; and after moving sluggishly about, and without feeding, both returned to their respective resting-places, and took up precisely their former positions. Another larva fed a little during the mid-day sun; but all have since remained perfectly quiet, although they have been under similar conditions of temperature.

(To be continued.)

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#### APORIA CRATÆGI: A DISCLAIMER.

I MUCH regret to find, by a letter received from my old friend, Mr. Webb, that he considers that in my note on the above insect (Entom. 233) I meant to impugn his veracity and good faith.

Not only had I no such meaning, but I do not think that, read as a whole, my note should bear such a construction; but, lest others should have been led into the same error as Mr. Webb, I take this the earliest possible opportunity of emphatically disclaiming any such meaning with regard either to himself or Mr. Carrington.

C. A. BRIGGS.

55, Lincoln's Inn Fields, Oct. 21, 1892.

*COLIAS EDUSA*, *C. HYALE*, &c., IN ENGLAND IN 1892:  
ADDITIONAL RECORDS.

*Bedfordshire*.—*C. edusa* was very abundant in a field in the middle of the village of Clapham at the beginning and middle of August. The field was planted with peas, oats, and barley, plentifully besprinkled with thistles and various wild plants, but no clover. The first time I visited there was, I think, August 10th, when I captured twelve specimens, males, and one female. Two of the males were worn so pale that, when flying, I took them for var. *helice*. Altogether I saw captured in this field about fifty specimens, but only heard of one being a female. It was fairly plentiful in fields near the road leading from Bedford to Bromham, and from Bromham to Turvey. I took a splendid specimen of var. *helice* on the road from Barford (Great) to Blunham in the middle of August. On June 2nd of this year I took a hibernated female of *C. edusa* on some chalk hills near Harlington, and on August 12th I took one female near the same place. I have seen no more. I took one or two males near the village of Milton, and one specimen of var. *helice*. — H. W. TOMLINSON; 52, Chaucer Road, Bedford, Sept. 6, 1892.

*Berkshire*.—Of the occurrence of *C. edusa* in this county, I have no notes, except near the north border. In and near Bagley Wood, and at Ferry Hinksey, I took several specimens during August, and saw many others. While at Kingston Bagpuze, early in the month, I was shown a fresh specimen, which had just been taken. On Sept. 15th I saw four rather worn examples at Cumnor, and succeeded in taking one female, although I had no net.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

*C. edusa* has been common at Reading this season. The earliest taken, to my knowledge, was a female, in my back garden, July 29th; and on the 31st I saw three, one pair *in cop.*, on the railway-bank near my house; Aug. 28th I took twenty (all males) and two *hyale*.—W. E. BUTLER; Hayling House, Oxford Road, Reading.

*C. edusa* was fairly plentiful during the month of August near Inkpen, in Berkshire.—JOHN C. BELL; 87, Darenth Road, Stamford Hill, N.

At an estimate, from 200 to 250 *C. edusa* have been taken here, with about a score of *C. hyale*, and about as many var. *helice*; so that *edusa* may be termed fairly common; the variety and *hyale* somewhat scarce.—J. CLARKE; 26, Zinzan Street, Reading, Sept. 2, 1892.

*Berks and Oxon.*—I saw one *C. edusa* on Whit-Monday, June 6th. On July 29th I saw a male flying in one of the principal streets of Reading; the same day I went into the country, and took two males. Since then I have taken between fifty and sixty, and seen many others, the males being in excess of females as three to two. Of the var. *helice*, I netted two and saw another. *C. hyale* is scarce; I caught one and saw another.—J. CLARKE; Reading, Sept. 2, 1892.

*Cambridgeshire*.—I took thirteen specimens of *C. edusa* last month (August), and one on May 30th. Only two were females.—(Miss) MADGE A. WILSON.

Odd specimens of *C. edusa* were seen here in June. In August they were plentiful in the clover-fields just out of the town, and I have seen two or three in the middle of the town. Var. *helice* also occurred sparingly, and I know of about ten *C. hyale* taken in this district by Messrs. Jones,

English, and Flete, of this town. *C. edusa* is still flying in good condition.—W. FARREN; Fern House, Union Road, Cambridge, Sept. 19, 1892.

Cheshire.—My brother saw a specimen of *C. edusa* flying by a roadside, but, being on a tricycle, he could not secure it.—S. RENSCHAW.

Whilst hunting to-day (Sept. 17th) for dragon-flies, on the heaths at Oakmere, in the Delamere Forest district, I saw a *C. edusa* coming straight towards me. It settled for three or four minutes on a blade of grass, nearly in the centre of a moss or bog, just a few yards away. I got almost within striking distance, and then it rose and continued its straight flight to the east, in which it seemed considerably helped by the western breeze. I need hardly say I got a good wetting, and when I got free of the bog, and to the top of the hill beyond which the butterfly had disappeared, the mysterious insect was nowhere to be seen. It was a brilliant and perfect specimen, evidently fresh from the chrysalis. I am not aware that *C. edusa* has been observed in the Chester district since 1877. *Vanessa atalanta* occurred plentifully to-day, not only on the heaths (on ragwort flowers), but also in the forest on the ferns and oaks. *Plusia gamma* was on the wing all day, and, I should think, all night, as it was very busy when I left, after dark. I took some fine specimens of *Hadena protea* from the oak-trunks. My dragon-fly captures were *Æschna juncea* and *Sympetrum scoticum*.—J. ARKLE; Chester, Sept. 17, 1892.

Cornwall.—On the 25th of August last, while staying at Falmouth, I had the pleasure of capturing a fine specimen of *C. edusa* near the Castle Drive. I saw many others, but, having no net, I was unable to capture more. *V. atalanta* and *V. io* were also very plentiful.—BERTRAM TALLIN; 41, King Street, Plymouth, Devon, Sept. 17, 1891.

Devonshire.—*C. edusa* is very plentiful here. I took a few isolated specimens prior to August 10th. On that day, in rather over an hour, I took fifteen, including one var. *helice*, in a small clover field of eight or nine acres. I went there the next morning for an hour, and took ten more *C. edusa*, including two of var. *helice*. Again, in the same field on the 20th, I took twenty-three, and two more of *helice*. *C. edusa* can now be taken anywhere and everywhere in this neighbourhood, and the bulk of the specimens are still fresh, as if just emerged. Other collectors round here have been equally fortunate with *C. edusa*, and I have heard of two or three more specimens of var. *helice*. *C. hyale* has not been seen, so far as I can learn. *Cynthia cardui* is fairly common here this season, but not plentiful. *Plusia gamma* a perfect pest.—E. F. STUDD; Oxtou, Exeter, Aug. 26.

Whilst staying at Lynton, in N. Devon, I succeeded in capturing twelve male specimens of *C. edusa* during the month of August.—S. RENSCHAW.

During my stay at Budleigh Salterton, S. Devon, I found *C. edusa* fairly plentiful, the insect making its first appearance on July 28th. I saw three specimens of the var. *helice*, of which I succeeded in capturing two, both fresh and in capital condition.—HERBERT F. HUNT; 14, Thistlewaite Road, Clapton, N.E., Sept. 13, 1892.

Since my return from Cornwall, I have seen *C. edusa* and *V. atalanta* very common in the neighbourhood of Plymouth.—BERTRAM TALLIN; 41, King Street, Plymouth, Devon, Sept. 17, 1892.

I found *C. edusa* very plentiful at Teignmouth, S. Devon. I also caught one example of var. *helice*.—E. H. WORSEY; Woodlands, The Park, Cheltenham, Oct. 6, 1892.

*C. edusa* was fairly abundant in the neighbourhood of Braunton Burrows, amongst ragwort, during the last fortnight in August, in the proportion of



about one female to six males. — CHAS. BARTLETT; Branscombe, Redland Green, Bristol, October, 1892.

I hear that *C. edusa* was common at Instow, N. Devon, and my brother writes me that he has frequently seen it in his garden at Buckland Dinham, near Frome, Somerset. — GERVASE F. MATHEW, H.M.S. 'Tyne,' Chatham, Sept. 20.

*Dorsetshire*. — *C. edusa* has been excessively abundant at Weymouth. I saw them the first day I went out there, 27th July, a few, and on many subsequent days by hundreds. The var. *helice* occurred sparingly. — W. CLAXTON; Hartley Wintney, Winchfield, Sept. 3, 1892.

Visiting Swanage, Aug. 15th and 19th, with my friend Mr. S. Kipping, we found *C. edusa* fairly plentiful, taking between us some sixty odd specimens, seven of which were females. The only example of the var. *helice* noticed fell to my net. — F. W. LAMBERT; 17, Woodstock Road, Oxford.

I saw *C. edusa* for the first time this year on May 25th at Blandford. I noticed it in that neighbourhood from that day till the 17th of June, and again on the 25th of July and 3rd of August, during which month the butterfly appeared in much greater numbers than before. — J. H. WARD; Rectory, Gussage St. Michael, Dorset.

*Essex*. — On August 12th I saw one example of *C. edusa* on the rifle range at Rainham, Essex. — WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

On the 23rd of August I captured four *C. edusa*, two males and two females, and saw about forty others, on a piece of rough ground near the rifle range at High Beech, Epping Forest. On the 24th I saw another fly across the road near the 'Wake Arms.' The greater proportion of those seen appeared to be males. — R. LADDIMAN; 25, Hellesdon Road, Norwich.

*C. edusa* and *C. hyale* have been fairly plentiful here this year during the latter half of August, this being the first time I have seen *C. hyale* in the neighbourhood. The males of *edusa* were much in excess of the females, the average being ten males to one female. The variety *helice* was not seen. — F. KERRY; Harwich.

My brother observed *C. edusa* in plenty and one *C. hyale* at Southend. — CHARLES SPELLER; Hornsey Lane, N.

*C. edusa* was not uncommon at Walton-on-the-Naze in August, and a fresh female specimen of *C. hyale* was taken by Master Egbert Smith, a young friend of mine. — (Rev.) F. A. WALKER.

During the past week I caught, besides many good specimens of *C. edusa*, a fine example of the var. *helice*. — J. BERNARD ARGENT; Woodford Wells, Aug. 23, 1892.

I have taken *C. edusa* commonly here during August and September, in clover fields and on the railway banks. I have taken altogether between forty and fifty *C. edusa*, one var. *helice*, and seven *C. hyale*, which is, unfortunately, rather damaged. All over this part of Essex, and further down the line, it has occurred commonly. — E. BAXTER; The Park, Hutton, near Brentwood, Essex, Oct. 7, 1892.

*Gloucestershire*. — Several specimens of *C. edusa* have been taken at Stoke Gifford, in Gloucestershire. — CHAS. BARTLETT; Branscombe, Redland Green, Bristol, October, 1892.

*Hampshire*. — I have noticed a great number of specimens of *C. edusa* here since the beginning of August, but have not come across any *hyale* or

the var. *helice*. Though I have collected here for six years, I have not seen *C. edusa* here before. I have also noticed great quantities of *Vanessa atalanta* and *V. io*, but only a few *V. urticae*, and not a single specimen of *V. polychloros*, although this is rather a good place for them. *Cynthia cardui* I have also seen in fair numbers, including one pale variety. As for the commoner blues, coppers, &c., they have been positively swarming; but *Gonepteryx rhamni* has been conspicuous by its absence, at least I have not seen one. The other day, in a small paddock with a lot of thistles in flower, I saw a beautiful sight: it was literally alive with butterflies,—*io*, *cardui*, *alexis*, *phloxas*, &c.,—a very happy sight for one who could admire without itching to bring out the net. And while on this point, is it not rather a pity that such large numbers should be netted directly any intermittent specimen appears commonly? I see one gentleman says he has netted eighty-seven specimens of *C. edusa*. I think he would have benefited science more had he let the rest go, when he had sufficiently stocked his collection. — CECIL LAW; Archfield, Hants. [It is probably a desire to assist entomological friends with specimens that induces one to capture long series of a species which but rarely appears in profusion in this country.—Ed.]

At Bournemouth *C. edusa* has been fairly abundant, my box showing a picked dozen, among other things, for a morning's work. During ten days there I only saw three *helice*, two of which were captured.—HUGH E. HOPKINS; 153, Camden Grove North, Peckham, Sept. 3, 1892.

*C. edusa* was so very plentiful during the latter part of July, August, and early September in all parts of S. Hampshire, that a good series could easily be obtained, ranging from the dark orange, with the warm varying glow, to the light *helice*, which variety, however, was not in due proportion to the type. A feature of the visitation was the preponderance of males over females, the ratio being about 5:1. I captured one light male, not much larger than a fine specimen of *C. phloxas*; and Mr. Larcom and myself managed to secure a good number of the variety. *C. hyale* appeared sparingly, but I managed to obtain a fairly good series. They occurred rather freely in a lucerne field at Westend, near Southampton, and I had the pleasure of capturing five there in less than a hour. Mr. Larcom and I each took a specimen of the white variety. — W. H. MACKETT; Science and Art School, Gosport.

One specimen of *C. edusa* seen at Southsea on Aug. 21st, and two at Hayling Island on the 23rd.—E. R. CHAMBERS.

I took three females of *C. edusa*, including one var. *helice*, in the New Forest in August last. — HENRY A. HILL; 132, Haverstock Hill, Hampstead, N.W., Oct. 5, 1892.

I saw a specimen of *C. edusa* flying over the heather at Bournemouth at the beginning of July. Soon after that several were seen at Swanage, where the species was very plentiful on Aug. 5th, but there were no *helice* to be seen. During August *C. edusa* was to be seen even in the gardens at Bournemouth, I hear. I have noticed that *Macroglossa stellatarum* and *Uropteryx sambucata* were both unusually plentiful this year, whilst I found *Argynnis adippe* far more common than usual during July in the New Forest.—(Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2.

*Herefordshire*.—From Aug. 20th to Sept. 14th we captured, near Hereford, seventy specimens of *C. edusa* (sixty-two males, eight females), besides missing several others:—August 20th, twenty-eight males, four females; 22nd, nineteen males; 25th, six males, two females; 30th, two

males; Sept. 5th, one male; 8th, four males; 14th, two males, two females.—F. L. BLATHWAYT; Hereford, Sept. 14, 1892.

*C. edusa* appears to have been fairly common, during August and September, in this county; a friend informed me it was first observed during the early part of July. Two brothers stated that they captured, in two days about the middle of August, about one hundred specimens, and I have heard of smaller numbers having been taken by other collectors. I do not think the species was so abundant as it was in 1877. There was then no occasion to seek for it; it was to be seen on every railway embankment, or even in the streets of a town.—J. B. PILLEY; 2, High Town, Hereford.

*Hertfordshire*.—*C. edusa* has been fairly common here during the month of August. A friend of mine has also collected, at Sandgate, a number of *C. edusa*, one of the var. *helice*, and one specimen of *C. hyale*. *Vanessa cardui*, *V. io*, and *V. atalanta* were common here during August, *V. atalanta* being exceedingly abundant.—R. DYMOND; Ferney House, Southgate, Herts, Sept. 14, 1892.

One example of each sex of *C. edusa* taken near Harpenden on the 8th of September, and a female on the 14th.—E. R. CHAMBERS.

*Kent*.—I witnessed the capture of three specimens of *C. hyale* in a field of lucerne. The insect was fairly abundant, but before to-day (with one doubtful exception) I have not seen it, though *C. edusa* is plentiful in this locality. My son, who captured them, had to give smart chase, as their flight was rapid.—M. CHAMPNEYS; Tankerton-on-Sea, Whitstable, Kent, Aug. 26, 1892.

*C. edusa* has been abundant in the marshes in this district during the past month, but one particular clover field, some acres in extent, has been the most highly favoured. My son and I have taken a long series, much varied both in colour and markings; also about twenty-five of the var. *helice*, including a few grand intermediate forms. One of the male *C. edusa* that we have captured is of a pale lemon colour (the under side being lemon-green), and a female is primrose coloured, quite distinct from either the type, var. *helice*, or intermediate forms. I may add that most, if not all, are in "bred" condition, and that the majority of the males have the hind wings much suffused with rosy purple. It has evidently been an "*edusa* year." Many hundreds might have been taken in this field alone. We occasionally, of course, visited other spots in the neighbourhood, but did not find the species so numerous, although there were a good many about, and an occasional *helice* was met with.—E. SABINE; The Villas, Erith, September, 1892.

While walking on Blackheath this afternoon my son saw a specimen of *C. edusa* fly leisurely by, but, not having a net at the time, he was unable to secure it. I have no previous record of the species in this immediate neighbourhood since August, 1877.—ROBT. ADKIN; Lewisham, Sept. 10.

*C. edusa* has been fairly common at Ashford and district. I captured some fine females, which sex was common in clover fields. I also took two examples of var. *helice*, and I succeeded in capturing eight specimens of *C. hyale* on Aug. 20th. *Vanessa cardui* and *V. atalanta* were fairly common in clover fields.—D. CHITTENDEN; Willesborough Lees, Ashford, Kent, Oct. 1, 1892.

On Sept. 3rd I saw one *C. edusa* on the sand-dunes at Deal.—A. SICH; Villa Amalinda, Burlington Lane, Chiswick, Sept. 21, 1892.

I have not seen many *C. edusa* around Bexley Heath myself, but while I was on my second visit to Sussex, a friend worked a patch of clover near



Dartford Heath, and captured over thirty specimens, including one of var. *helice*, and one *hyale*, in an afternoon. I went to the same spot about a week later, but the clover had been cut, and there was not a single *edusa* to be seen.—P. T. LATHY; Warren Road, Bexley Heath, Kent, Oct. 3, 1892.

I noticed the first *C. edusa* on July 30th, at Chatham Dockyard, and throughout August, and up to the 15th instant, it was common both at Chatham and the neighbourhood of Sittingbourne; and I even saw it on several occasions in the streets of Chatham and Brompton. A large number might have been captured, and I secured a very fine series, including six of the var. *helice*, and also a remarkable variety of the female, of the ordinary colour, but with very deep and unspotted marginal bands. The first *C. hyale* was observed in Chatham Dockyard on August 16th, and from that time, up to Sept. 15th, it was noticed sparingly both in the neighbourhood of Chatham and Frinsted, and three dozen of them were captured. Among this number there was only one female. The weather during this period was not very favourable for them, for there were a number of dull or wet days, and the nights were often very cold—so cold that I fancy many of the butterflies must have perished. As a rule, when the bright days occurred, I was employed on duty on board my ship, or else I should probably have obtained a good many more.—GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham, Sept. 20.

*C. edusa* was very plentiful about Tunbridge Wells this season. I also took a very fine example of the var. *helice* and one *C. hyale*.—H. W. SHEPHEARD; Walwyn, Glensyde, Bidborough, near Tunbridge Wells.

I captured two males and one female *C. edusa*, and two examples of *C. hyale*, at Broadstairs, in August.—HENRY A. HILL; Hampstead.

At Folkestone, on July 22nd, I took one freshly-emerged male of *C. edusa*, in the Warren; and on August 17th, in company with two friends, we took a large number; also a few var. *helice* and *C. hyale*.—W. E. BUTLER; Hayling House, Oxford Road, Reading.

Several males of *C. edusa*, taken in a lucerne field near Ramsgate during the last week of July and first week of August. Three females (one var. *helice*) were captured on the 11th August, and eight males on the 13th.—E. R. CHAMBERS.

*Lancashire*.—On Aug. 26th I saw a fine female *C. edusa* taken that day by a boy in a field near my house. I do not think *C. edusa* has been seen in this neighbourhood since 1877; a friend of mine then took two of the type and one var. *helice* about a mile from here.—B. H. CRABTREE; The Oaklands, Grange Avenue, Levenshulme, Manchester.

Upwards of sixty specimens of *C. edusa* have been taken here this year. I am also informed that a considerable number have been taken at Arnside, near here. Of those taken by myself, two in every five specimens were females, in beautiful condition. *Vanessa cardui* has been very common during the autumn.—GEO. A. BOOTH; Fern Hill, Grange-over-Sands, Oct. 6, 1892.

I have not seen *C. edusa* since the 8th of June till somewhere about the middle of August, near How Hall, Ennerdale, where I was staying during August. I missed it, but on returning home I took eleven, and one was given me (all but the latter caught between Sept. 4th and 10th). The males were in exact proportion of three to one female; one of the latter was var. *helice*, in good condition.—JOHN WEBSTER; Barony House, St. Bees, *viâ* Carnforth, Sept. 24, 1892.

*Leicestershire*.—Three specimens of *C. edusa* were taken near Bottesford

—two on Sept. 10th and one on Sept. 18th. I saw several others near the same places.—WM. G. THELSON; Shelton Hall, Newark, Sept. 20, 1892.

*Lincolnshire*.—During our drive from Mansfield to Edwinstowe a lovely *C. edusa* fluttered over the hedge, and dropped on a bright yellow frond of bracken. A cloud fortunately obscuring the sun for a few minutes allowed the net to be fixed, and the insect captured. It proved to be a freshly emerged male. Walking back to Mansfield next morning, one more *C. edusa* was taken in rather a tattered condition. *Vanessa cardui* and *V. atalanta* were fairly common. An entomological friend informs me that three specimens of *C. edusa* were taken near Lincoln last week, and two near Market Rasen, on the edge of the wolds, on Saturday.—W. D. CARR; Lincoln, Sept. 6, 1892.

Thirty or forty *C. edusa* have been taken in the neighbourhood of Market Rasen since 22nd August, including the var. *helice*.—W. LEWINGTON; Market Rasen.

*Middlesex*.—On the 2nd of August I noticed a specimen of *C. edusa* flying along the railway bank just outside Westbourne Park Station. On the 21st of the same month I saw a male *C. edusa* round a clump of flowering shrubs in a corner of Highbury Fields; exactly a week later (on the 28th) I observed another specimen of this butterfly settling on a flower in the same clump of bushes. Of other species, I have this season come across, in London, *Vanessa urticae* and *V. atalanta*.—HAROLD HODGE; 2, Essex Court, Temple.

On August the 22nd I saw a specimen of *C. edusa* fly across Cambridge Road, near the Cambridge Heath Railway Station.—R. LADDIMAN; 25, Hellesdon Road, Norwich.

On Saturday, Sept. 24th, while on my way to play cricket, I captured, in Victoria Park, E., a fine specimen of *C. edusa*, a female, and perfectly fresh. The insect was not twenty yards from where cricket was being played, and was easily secured.—W. E. LANE; 9, Teesdale Street, Hackney Road, E., Sept. 27, 1892.

A fine specimen of *C. edusa* var. *helice* was taken by a friend of mine in his garden on Stamford Hill on August 28th, and is now in my cabinet.—(Rev.) J. S. ST. JOHN; 42, Castlewood Road, Stamford Hill, Oct. 21, 1892.

Two specimens of *C. edusa* were taken by a friend on Hampstead Heath this autumn.—HENRY A. HILL; Hampstead.

On Sept. 8th I took a female *C. edusa* in a garden here. Lepidoptera are more than usually abundant in this neighbourhood this year, and I think the same may be said of ichneumons.—A. SICH; Chiswick.

I took one example of each sex of *C. edusa* on Northwood Common on the morning of August 20th, and I noticed two other specimens flying along the embankment of the Met. Rail. between Pinner and Harrow. On the 22nd of August I saw one flying along the railway embankment between West Hampstead and Kilburn. I captured a female specimen and saw two others in a field near Dudden Hill, Cricklewood, on August 23rd. While on Northwood Common (Sept. 15th), I noticed a specimen of *C. hyale* fly over a gate into an adjoining field at the northern end, whither I followed it; but, on starting it afresh, unfortunately missed my stroke, when it became wild, and disappeared. It seemed in very faded condition.—(Rev.) F. A. WALKER, D.D.; Dun Mallard, Cricklewood, Sept. 15.

During the latter part of August I have noticed a few *C. edusa* in a nursery ground at Clapton, but they now seem to have disappeared.—HERBERT F. HUNT; 14, Thistlewaite Road, Clapton, N.E., Sept. 13, 1892.

A long series of *C. edusa* has been taken by a working engineer between Willesden and Sudbury. A fine specimen was taken in the garden here on the morning of September 28th.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald.

During the months of July and August I captured many perfect specimens of *C. edusa*, but only one *C. hyale*, a female. *Vanessa* (*Cynthia*) *cardui* were plentiful in early summer, but have now disappeared; while *V. atalanta* and *V. io* are still on the wing. All these insects have been very numerous in the neighbourhood of Harrow, and to my knowledge over fifty *C. edusa* specimens, chiefly males, have been secured.—CHAS. RHOADES SMITH; Greenhill, Harrow-on-the-Hill, Sept. 14.

Norfolk.—On Aug. 17th I saw a specimen of *C. edusa*, a male, at rest on a knapweed flower (*Centaurea*) in a lane near South Walsham, but failed to capture it.—R. LADDIMAN; 25, Hellesdon Road, Norwich.

Northamptonshire.—*C. edusa* was out very early in fields near the road leading from Olney to Yardley, Hastings, on Aug. 7th.—H. W. TOMLINSON; 52, Chaucer Road, Bedford, Sept. 6, 1892.

During the ten or twelve years I have been collecting, I have only known of one specimen of *C. edusa* caught in this county before this year. Now, however, they are abundant in almost every clover field I have visited. The first I saw was on Aug. 22nd, a much worn male. On Aug. 23rd my brother caught several (only two females), all in splendid condition, except one female, which was most dilapidated. Since that time we have caught as many as we require, including one var. *helice*, and have seen many more. They are all perfect, most of them having the beautiful iridescent bloom still on them. The males seem very much more numerous than the females. Along with *edusa* an enormous number of *Vanessidæ* and *Plusia gamma* were at the clover.—EUSTACE F. WALLIS; Inglenook, Kettering.

Notts.—Two males were taken by my brother and myself near Edwinstowe on Aug. 25th and 26th, and a good many specimens have been captured in gardens and fields in and around Nottingham.—J. W. CARR; University College, Nottingham, Oct. 3, 1892.

A male specimen of *C. edusa* was captured on August 21st at Cotham, near Newark, Notts.—WILLIAM G. NELSON; Shelton Hall, Newark, Sept. 20, 1892.

I saw a specimen of *C. edusa* here on August 28th, which is the first I have noticed since 1877, when they were fairly plentiful.—DOUGLAS H. PEARSON; Chilwell, Notts.

Oxfordshire.—During August *C. edusa* was not uncommon in the near vicinity of Oxford, and also in various parts of the county. On the 26th, Mr. O. V. Aplin, of Bloxham, near Banbury, wrote me, "*C. edusa* in numbers in clover fields just outside village; netted seven, including one female, in less than an hour on the 24th; saw a great many." I also have specimens from Bletchington and near Stow Wood. Between Shabbington and Waterperry Woods, about eight examples were noticed by a friend of mine. Of some sixteen specimens I took, two only were females.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

(To be concluded.)



## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &amp;c.

(Continued from p. 214.)

*Catocala*.

I have not the least doubt that Walker's *C. nuptula* and Grote's *C. alabamæ* are females of Cramer's *C. grynea*. Walker's *C. nuptula* is more distinct in character than Grote's *C. alabamæ*; both have the black border of the secondaries interrupted; but this character will not hold, as an example from Zeller's collection has the border only united on the margin by a hair-line.

I cannot quite see my way to clearly distinguishing between *C. cratægi*, *pretiosa*, and *mira*; I cannot find out where one leaves off and the other begins.\*

I think it very doubtful whether my *C. xarippe* from Japan will hold its position as a species distinct from *C. paranymphe*; the characters upon which it was separated are certainly variable, and a long series of Japanese specimens may completely link it to *C. paranymphe*.

*Catocala prægnax*.

♂ *Catocala prægnax*, Walker, Lep. Het. xiv. p. 1213, n. 66 (1857).

♀ *C. obliterata*, Ménétries, Cat. Mus. Petrop. iii. p. 159, pl. xvii. fig. 3 (1863).

♀ *C. esther*, Butler, Cist. Ent. ii. p. 243, n. 8 (1877); Ill. Typ. Lep. Het. ii. p. 40, pl. xxxiii. fig. 9 (1878).

China and Japan. Type in Col. B. M.

Walker's type is a very worn male from North China. The figure, by Ménétries, is evidently taken from an equally worn female, as the most important markings are slurred over, and the brown shades brought into prominence as markings. The Japanese type belongs to the white-spotted, pale-belted variety, to which we possess a perfect gradational transition in our series of specimens.

*Catocala nymphæa*.

*Noctua nymphæa*, Esper, Eur. Schmett. p. 158, pl. 105, fig. 4 (1787).

*Catocala persimilis*, Warren, Proc. Zool. Soc. 1888, p. 314.

Var. *C. dotata*, Walker, Lep. Het. xiii. p. 1212, n. 65 (1857).

Europe, "New York," India. In Coll. B. M. I doubt the correctness of the locality, "New York," for this species.

\* A specimen of this form in Zeller's collection is labelled as *C. polygama*, Guen., and I am not sure that it is an error; the two forms are terribly close. I thought I had discovered a difference in the post-median line of primaries, but it varies.

I have tried to distinguish *C. communis*, Grote, from *C. neogama*, Abb., even as a variety, but can discover no points of any importance; *C. snowiana*, on the other hand, is far more like *C. piatrix*, though much darker. Knowing what I do of the variability of European and Japanese forms, it would not surprise me to find that *C. subnata* and *piatrix* were both varieties of *C. neogama*. American students, however, should be the best judges of their own species. But for the admitted identity of *C. snowiana* (the most distinct form of the lot), I should not presume to suggest the possible specific identity of such a well-marked form as *C. piatrix* with *C. neogama*; at the same time, apart from the general tint of the primaries, it differs less from *C. neogama* than *C. phalanga* does from *C. palæogama* or *C. scintillans* from *C. innubens*. In the Zeller collection were two specimens labelled as *C. neogama*, one of which is certainly *C. piatrix*, as shown by the colouring of the primaries and the continued black angular band on secondaries. Grote gives *C. zoe* and *C. uxor* as varieties of *C. ilia*, and perhaps he is right in so doing; but *C. albomacula*, Edw., is much nearer to typical *C. ilia* than *C. zoe*, for it only differs in having the reniform spot wholly white. In this instance I unhesitatingly declare it to be a variety. I don't feel so sure about *C. zoe*; it differs in pattern.

Grote rightly sank *C. walshii* as *C. junctura*, but his *C. arizonæ* is nothing else; the markings are identical. *C. semirelicta*, Grote, is, in my opinion, nothing but a badly faded example of the white-spotted form of *C. unijuga*; if the red of the secondaries were restored and the primaries darkened there would be nothing to distinguish it by; the form of the black band across the secondaries has a different appearance at first sight, owing to the drooping of these wings, but, as a matter of fact, it differs less in outline than some of our other examples of *C. unijuga*.

Apart from the unquestionably variable character of the black band across the secondaries, I see no reason why *C. pura*, *meskei*, and *beaniana* should not be all one species (I am satisfied that the two last are one); and it would not take much to persuade me that *C. hermia* was no more than a well-marked variety. The last mentioned is, in any case, nearly allied to *C. adultera*, Ménétr. (a transitional form to *C. unijuga*). From Lord Walsingham's Californian collection we obtained an example of *C. hermia*, the primaries of which are like *C. meskei*, male, or (if anything) a little less defined in marking. In some copies of Ménétries' Catalogue, *C. adultera* is uncoloured.

I have no doubt that *C. grotiana* is a form of *C. briseis*; but whether it is locally constant, or is merely a variety in which the white band across the disc is a little better marked, I am unable to say; it differs no more than other admitted varieties of species in the genus. I should not be surprised to hear that both had been proved by breeding to be forms of *C. mariana*.

*C. unicuba*, Walk., said to have been collected in N. India, is certainly identical with *C. nupta* of Europe, and *C. zalmunna*, Butl., from Japan, cannot be separated from a fair series of the European *C. electa*. *C. selecta*, Walk., is the form of *C. amatrix*, without blackish patches on the primaries.

Apart from its superior size, I fail to see how *C. dilecta* is to be distinguished from *C. sponsa*; it agrees on both surfaces, and varies in the same way. *C. dula*, Brem., on the other hand, though like it on the upper surface, is totally dissimilar below. I do not feel satisfied of the distinctness of *C. angusi* and *C. residua*, Grote; and I certainly believe that *C. resecta* is no more than a slight variety of *C. desperata*. With a series of eleven examples before me, I have not been able to discover one constant character by which to distinguish them. In typical *C. resecta* the reniform spot tends to become slightly browner, and the whitish stripe across the disc a little more zigzag, than in typical *C. desperata*; but these points are variable.

#### POLYDERMIDÆ.

*BLENINA*, Walk.

*Eliochroea*, Walk.

*Blenina chrysochlora*.

*Eliochroea chrysochlora*, Walker, Lep. Het. Suppl. 3, p. 934 (1865).

*Amphipyra*? *laportei*, Felder, Reise der Nov. Lep. iv. pl. cxi. fig. 28.

Ceram. Type in Col. B. M.

Felder and Rogenhofer's error in referring this species to *Amphipyra* is not worse than my own. I referred a *Triphæna* (*T. curtipalpis*) to *Eliochroea*, and a *Triphænopsis* (*T. opulenta*) to the same genus. It requires some little study of the neururation of the *Noctuities* to enable anyone to place the species correctly; pattern and coloration are repeated in different families, and even the length of the palpi does not guide one infallibly.

The genus *Plotheia*, hitherto referred to the family Hypogrammidæ, is scarcely distinct from *Blenina*, and most certainly stands next to it. Mr. Hampson has clearly shown that all the Ceylonese forms are variations of one species. It may be divided into fairly well-marked forms thus:—

*Plotheia frontalis*, Walk., = *canescens* and *basifascia*, = *guttulosa*, = *cinerascens*, Walk.

Var. *a.* *P. decrescens*, Walk., = *onusta*, = *signata*, = *subglauca*, Walk.

Var. *b.* *P. spurcata*, Walk.

Var. *c.* *P. velata*, Walk., = *imprimens*, Walk.

Var. *d.* *P. concisa*, Walk., = *lichenoides*, Felder.

Var. *e.* *P. lativitta*, Moore, = *lichenoides*, Moore (not Felder).



Var. *f.* *P. griseovirens*, Moore.

Var. *g.* *P. albivitta*, Walk.

Var. *h.* *P. albotecta*, Walk.

Var. *i.* *P. plagiata*, Walk.

Var. *j.* *P. rudivitta*, Walk.

Var. *k.* *P. lata*, Walk.

Of these forms the least constant are *P. velata* and *P. griseovirens*, which those who delight in giving names to sports and melanistic forms would, doubtless, separate into new varieties. Personally, I think too much has already been done for this one species.

*Diomea orbicularis* and *chloromella* (referred to *Plotheia* by Mr. Moore) cannot remain in this genus.

*Pandesma sublimis*, Felder, and *Agriopis marmorifera*, Walk., must be placed under *Bamra*, Moore. An allied, but distinct, genus will include *Dandaca biformis*, Walk., *Pandesma hemodi*, Feld., *Pandesma virens*, Butl., *Dandaca eurychlora*, Walk., and *Felinia terminigera*, Walk.

(To be continued.)

## MELISSOBLAPTES GULARIS, ZELLER, A NEW GRANARY PEST.

By J. H. A. JENNER, F.E.S.

In September, 1891, a friend gave me some samples of rice, termed in the trade "Polished Japan Rice," which had recently arrived in London by several steamers from Japan. The samples contained several cocoons constructed of rice-grains, loosely spun together with silk; in some instances as many as fifty or sixty grains were thus loosely attached. As I did not closely examine the contents of these cocoons, I am unable to say whether the tenants were then in the larva or pupa stage. They, however, remained quite quiescent until the beginning of June last, when two moths emerged. My friend, Mr. C. O. Waterhouse, has kindly identified them as *Melissoblaptēs gularis*, Zeller,\* a species scarce in collections, and "of the habits of which very little is known."

It is quite possible that this species may become a serious nuisance to granary keepers, as I am told that the ordinary method of sampling rice in London would not have exposed the mischief, which was only discovered when the bags containing the rice were turned inside out, the cocoons adhering in most instances to the inside of the bag. A few bags laid by unexamined would, therefore, be not unlikely to lead to the permanent establishment of the insect in this country.

4, East Street, Lewes.

\* Hor. Ent. Ross. xiii. p. 74, pl. i. fig. 26, pl. ii. fig. 27 (1877).—Ed.

## ENTOMOLOGICAL NOTES, CAPTURES, &amp;c.

VANESSIDÆ IN SOUTH WALES.—*Io*, *atalanta*, *urticæ*, and *cardui* have simply been swarming, and many of them have been of large size. *Grapta c-album* has turned up in the neighbourhood, Mr. Howe having caught one and seen several about a week since. On July 24th I saw a specimen of this species at Abergavenny.—G. A. BIRKENHEAD; Penarth.

ARCTIA FULIGINOSA, SECOND BROOD.—I am now having the pleasure of witnessing the emergence of the second generation of this species from the female I took on Barry Island on May 14th. The first imagines I had from the ova laid by this female began to emerge on July 16th. On the 22nd a couple paired, and the female began laying ova on the 24th, which hatched on the 31st. The larvæ fed up well on dock leaves, and commenced spinning about August 28th, the first imago emerging September 18th, another on the 23rd, and another to-day. At the present time I have some fourteen or sixteen pupæ, and many larvæ ready for spinning; others much smaller. I must say I have kept them indoors upstairs, and probably this may have been the reason of the second batch of imagines, which have thus made three broods in the year.—G. A. BIRKENHEAD; Downs View, Penarth, Sept. 24, 1892.

EARLY APPEARANCE OF HYBERNIA DEFOLIARIA.—On September 26th I took a specimen of the above off a lamp. This is the earliest I have ever seen it. The earliest record from my note-book is October 8th.—W. G. BUTLER; Hayling House, Oxford Road, Reading.

ABUNDANCE OF THE LARVÆ OF PIERIS BRASSICÆ.—The larvæ of this butterfly are simply swarming here. I never saw anything like it before. In some gardens whole rows of broccoli have had their leaves reduced to shreds, nothing but the ribs remaining; and cabbages, savoy, and brussels-sprouts have also been badly eaten. Borecole seems to have escaped. In flower gardens various species of tropæolum have suffered greatly. About two hundred yards from my house there are three or four whitewashed houses standing in a garden, and the walls of the houses present a sight which I shall not easily forget, for they are so thickly studded with larvæ, pupæ, and yellow masses of ichneumon cocoons (*Apanteles glomeratus*, L.) that I do not believe it would be possible to find a clear space two inches square anywhere upon them. Have these larvæ been as abundant elsewhere?—GERVASE F. MATHEW; Dovercourt, Oct. 10, 1892.

LARVÆ OF SATURNIA PAVONIA (CARPINI) ON BIRCH.—I have now about twenty cocoons of *Saturnia carpini*, of which the larvæ were reared entirely on birch (*Betula alba*). I found a nest of them, very young, on a small birch tree on 9th June, some of which I took and sleeved, and left nearly full-fed when I went for my holiday on July 25th. On my return early in September they had all spun up on the muslin or among the leaves. I cannot find any mention of birch as a food-plant of *carpini* in the books.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 17, 1892.

ERRATIC APPEARANCE OF CERURA VINULA.—Seven larvæ taken on poplar in August of 1888 all formed cocoons on same piece of wood, and being subject to the same atmospherical conditions have since emerged:—one in June, 1889; one in June, 1890; one in June, 1891; one in May,

1892. The remaining three are still in the chrysalis state.—M. FITZ GGBON; Kilrock House, Howth, Co. Dublin, Sept. 25, 1892.

EARLY PUPATION OF *SMERINTHUS TILIE*.—On May 27th I got eggs from *Smerinthus tilie*, which hatched out in a week; and the first full-fed larva went down, in fifty-three days from the laying of the eggs, on July 18th. The rest followed at intervals for about three weeks longer.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 17, 1892.

LARVA OF *POLYOMMATUS ALCIPHON* VAR. *GORDIUS*, *Stgr.*—I found a larva of this species, full-fed, on *Rumex acetosa* (sheep-sorrel dock), in the crevice of a wall here. It measures exactly seven lines in length. In comparing my example with that described and figured in Dr. Hofmann's recent work on European caterpillars, I find it does not appear to differ in any respect from that of the type *Alciphron* figured, either in coloration or markings. In this connection it is interesting to note that the var. *gordius* entirely replaces the typical form throughout the district. Is this not rather a late period of the season at which to find the species? It is generally stated to occur in April and June.—F. BROMILOW; St. Martin Vésulie, Alpes-Maritimes, S. France, Oct. 2, 1892.

VARIETIES OF BUTTERFLIES.—On August 4th I took a beautiful variety of *Polyommatus alexis* at Botley, similar to one figured in Newman. A pretty variety of *Chrysophanus phlæas*, having on each of its front wings a white silvery blotch, was captured by me at Fort Rowner, Gosport, on August 16th.—W. H. MACKETT; Science and Art School, Gosport.

ABUNDANCE OF *EREBIA BLANDINA*.—While staying in Upper Wharfedale, Yorkshire, this year, I took *Erebia blandina* in great numbers. On August 16th I took eight specimens, in an open patch of ground about thirty yards square, in Grass-woods near Grassington. It was a dull close day, and raining nearly all the time I was in the wood; but it was not actually raining at the time I took the specimens. On the 18th, being a splendid day, I went to the same place, and found a fresh lot had come out, the majority being perfect specimens. There were literally hundreds; sometimes three on a flower. I took one smaller than the rest. About a fortnight later I saw *Colias edusa*, on the road between Wheldrake and York.—C. E. LAMB; Lindley Lodge, Nuneaton.

*DEIOPEIA PULCHELLA* IN THE HASTINGS DISTRICT.—I am glad to be able to add two more instances of the occurrence of this moth to those noticed by your correspondent Mr. W. W. Esam (*Entom.* 220). One specimen was taken at Battle by Miss D. M. Raper; and another was observed at Guestling in the last week of August.—E. N. BLOOMFIELD; Guestling Rectory, Sept. 19, 1892.

*DEIOPEIA PULCHELLA* AT FOLKESTONE.—I have a fine female specimen of *D. pulchella*, which was taken here on August 17th. It measures nearly two inches across the wings. It is the largest specimen I have ever seen.—W. J. AUSTEN; Radnor Street, Folkestone.

LARVA OF *MACROGLOSSA STELLATARUM*.—My brother and I took over a dozen larvæ of *Macroglossa stellatarum* at Westgate last July. One of these, of the dark green form, had the horn at the tail curved downwards, like that of the larva of *Sphinx ligustri*. The imago produced was rather dark, but otherwise normal.—ALFRED SICH; Chiswick.



**CHÆROCAMPA CELERIO IN DORSËTSHIRE.**—I have this morning taken a specimen of *Chærocampa celerio* at rest inside my bedroom window.—O. W. BENTHALL; Osborne Rectory, Sherborne, Dorset, Oct. 1, 1892.

**CHÆROCAMPA CELERIO IN KENT.**—A fine specimen of *C. celerio* was taken in a shop in this town on the evening of October 21st, and is now in my possession. Last autumn, whilst watching flowers of *N. affinis*, I saw a small dark Sphinx, which I took to be *celerio*, hovering over the flowers. It returned twice, but, from the celerity of its movements, I was unable to catch it.—C. VIGGERS; 36, Hardinge Road, Ashford, Kent, Oct. 25, 1892.

**HESPERIA LINEOLA.**—I was too late for the larva of this species this season, as I did not return from Hong Kong until the 6th July, and then spent about three weeks in North Devon and Somerset, and did not get to Dovercourt until the 23rd of the month. The next day was mostly dull, but I went out and found seven fine *lineola* sitting on grass, and one worn *linea*. The 25th was very dull and cold; but the 26th was bright, with a strong easterly breeze, and upon reaching the locality I found *lineola* in fair numbers, and soon boxed about a hundred of them. However, I was quite ten days too late; for many of the males were much worn, and only about one in three worth taking.—GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham, Sept. 19, 1892.

**SPHINX CONVULVULI IN 1892.**—Records have been received as follows:—

**Devon.**—A specimen of *Sphinx convolvuli* was brought to me by Mr. R. Gibbons, who took it on a paling adjoining the Exmouth Golf Links on September 21st.—JOHN M. CRIPPS; Belle Vue, Exmouth, Devon.

**Hampshire.**—I beg to record a fine female specimen of the above, found in a shop here on September 6th, which was given to Mr. Claxton, who has been staying here for a few days. It is almost a perfect specimen, being a little rubbed at the tips of the wings. I have never heard of the species occurring in the New Forest before, and have not seen any others this year, though I have searched for it several times at Christchurch.—J. M. ADYE; Brockenhurst, Sept. 19, 1892.

**Kent.**—On September 21st Mr. Andrews, the Bexley Heath naturalist, took a slightly worn female *Sphinx convolvuli*, crawling on the asphalt in front of his shop.—P. J. LATHY; Warren Road, Bexley Heath, Kent, Oct. 5, 1892.

I captured a fair specimen of *Sphinx convolvuli* on August 26th at Seabrook.—D. CHITTENDEN; Willesborough Lees, Ashford, Kent, Oct. 1.

**Middlesex.**—On the evening of Sept. 6th I caught a splendid specimen of *Sphinx convolvuli* (female) on the wing at the foot of Grove Hill, Harrow.—C. RHOADES SMITH; Greenhill, Harrow-on-the-Hill, Sept. 14.

**Suffolk.**—This morning a lady friend brought me a fine male specimen of *Sphinx convolvuli*, which was found on a newsagent's shop window almost in the centre of the town. It is two inches and a half across the wings from tip to tip.—GEO. CLOUT; St. Margarets, Ipswich, Suffolk.

**EMMELESIA ALBULATA DOUBLE-BROODED.**—A specimen of *E. albulata*, in very good condition, has just flown to the window of my sitting-room, whence it was quickly transferred to a cyanide-bottle. Newman and Stainton both give it as being single-brooded, and such I have always hitherto found it to be. These occasional second broods are very interesting, but to me quite unaccountable in a season like this; for although it

has been an "*edusa* year," yet there has been a remarkable absence of warmth and sunshine, in this part of England at any rate, ever since the middle of June.—(Rev.) G. H. RAYNOR; Panton Rectory, Wragby, Sept. 17, 1892.

ACRONYCTA ALNI NEAR TUNBRIDGE WELLS.—I found a larva of this species this season in the Tunbridge Wells district. It is now safely in pupa.—H. W. SHEPHEARD WALWYN; Glensyde, Bedborough, near Tunbridge Wells.

EUGONIA (ENNOMOS) AUTUMNARIA (ALNIARIA) AT CHICHESTER.—Two specimens of the large thorn, *Eugonia (Ennomos) autumnaria*, were taken by Mr. Patterson, of the Theological College, at a lamp here, on September 17th; and another by myself on September 20th. This insect is a female, and although not actually on the lamp, it seems to have been attracted by it, as I found it in the porch of the neighbouring villa to my own, in which a very brilliant lamp is suspended. I always had the idea that males only were attracted by light.—JOSEPH ANDERSON, Jun.; Chichester.

XANTHIC VARIETY OF ARCTIA CAIA (CAJA).—I have had the pleasure of adding to my collection a male of this moth, bred this season, in which the usual red colour of the lower wings is replaced by a bright and clear yellow. The body is of the same colour, and the ring also on the thorax.—JOSEPH ANDERSON, Jun.; Chichester.

PLUSIA MONETA IN SURREY.—I took two specimens of this species in our garden, at sugar, on June 11th.—ALEX. DISTANT; Purley, Surrey.

LYCENA (POLYOMMATUS) ARION IN THE FOREST OF DEAN.—Whilst riding through the Forest of Dean on my bicycle, when returning from Brecon, I saw several *Polyommatus arion*, but as I had no net with me I was unable to capture any of them.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, Sept. 22, 1892.

LARVA OF DEILEPHILA GALII AT CHISWICK.—On the 13th inst. my brother, Mr. Frank Sich, jun., found a larva of *Deilephila galii* on the common red fuchsia in a garden here. The following is a rough description of the larva:—Ground colour of the body almost black; there is an indication of a pale dorsal line, and below this on each side a series of large cream-coloured spots; below these again several small pale dots on each segment. The head and a shield on the second segment, as well as the anal flap, are dull red; the horn is brighter red. I placed the larva in a flower-pot with earth and leaves, and am glad to say that it has now begun to spin up. I have never heard of *D. galii* in this district before, though it has been taken occasionally in Middlesex (Entom. xxi. 210, 274).—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, Oct. 17, 1892.

COLIAS EDUSA AND VANESSA C-ALBUM IN NORTH STAFFORDSHIRE.—I have not had the good fortune of seeing a specimen of *edusa* this year in my own immediate neighbourhood, but I hear of it having been taken or seen in North Staffordshire. Mr. Ernest W. H. Blagg has, I believe, reported to the 'Entomologist' the capture of a female in a turnip field near Cheadle; and Mr. F. C. Woodforde saw one on June 7th at Belton-Moss, and another, a male, close to the town of Market Drayton, on Sept. 26th. Both these localities are on the Shropshire border of the county. But

although a North Staffordshire *edusa* has not favoured me with a visit, notwithstanding that I have kept a good look-out for it, I have had the luck to see and take what, in this North Staffordshire district, is a scarcer butterfly. On September 26th, in our own garden at Madeley Vicarage, on a white aster, I observed a *V. c-album* settled, and, sending into the house for a net, one of my sons soon came and captured the insect. It proved to be a male specimen, darkly marked, and in perfect condition. This is only the third time I have seen this butterfly in North Staffordshire, and I have only heard of two or three other specimens being taken in the last twenty-five years. I fancy this is one of those insects that is unfortunately on the decrease in this country.—(Rev.) THOS. W. DALTRY; Madeley Vicarage, Staffordshire.

HYBRID OF *THECLA SPINI* AND *T. ILICIS*.—The specimens I referred to (Entom. 193) as hybrids of these species are probably really var. *lynceus*, as suggested by Mr. Frank B. Norris (Entom. 240), to whom I am greatly obliged for directing my attention to this form of *T. spini*. Unfortunately, when writing the note, I was in the Riviera, and had only a few works at hand to refer to, the greater part of my little library being at Nice. I should, however, be very glad to hear further on the subject before correcting this in the new edition of my pamphlet which I am preparing.—F. BROMILOW; Avalon, St. Maurice, Nice (France).

SIREX JUVENCUS AT NORWICH.—On September 13th a male specimen of this sawfly was brought to me, which was taken in a street in this city.—ROBT. LADDIMAN; 25, Lower Hellesdon Road, Norwich, Oct. 1892.

SIREX JUVENCUS IN NOTTS.—On October 8th a fine specimen of *Sirex juvencus* was brought to me. Unfortunately the man who captured it had cut off its head, being in bodily fear of its formidable "sting." I have not met with this species here before, though several specimens of *S. gigas* have been taken.—DOUGLAS H. PEARSON; Chilwell, Notts, Oct. 17, 1892.

A CURIOUS PARASITE.—Prof. Bell has kindly informed me that the parasitic worm, referred to *ante*, p. 247, is a *Gordius*, not a *Filaria*.—RICHARD SOUTH.

PYRAMEIS (VANESSA) CARDUI.—The larvæ of this butterfly were very plentiful at Instow, North Devon, between the 6th and 19th of July; and I also took them at Buckland Dinham, Somerset, and at Dovercourt, Essex, afterwards, so that they appear to have been generally abundant this year. They were found on various kinds of thistles, and a few on nettle. The perfect insect was to be seen in numbers at Frinsted, in clover fields, up to the end of August, but after that time they nearly all disappeared.—GERVASE F. MATHKW; H.M.S. 'Tyne.'

PYRAMEIS (VANESSA) ATALANTA.—This beautiful butterfly was also more than usually abundant in the larva state in the localities above mentioned; and young larvæ just hatched and full-grown larvæ were to be found at the same time; while worn and fresh imagoes were also to be seen on the wing.—ID.

GORTYNA OCHRACEA.—The pupæ of this species were in great abundance last month in the stems of various kinds of thistles and ragwort growing in the extensive waste ground in Chatham Dockyard. The first moth appeared on August 30th.—ID.



**EUPITHECIA ABSINTHIATA, &c.**—In Chatham Dockyard there is a large extent of waste land, some 300 acres I should think, which is overgrown by a variety of wild plants, such as ragwort, sea-aster, *Chenopodium*, *Atriplex*, various thistles, &c. Upon the former, at the present time, the larvæ of *E. absinthiata* simply swarm; I have beaten a hundred from one plant, and they vary to an extraordinary degree, some of the varieties being very beautiful. They are also to be found on sea-aster, but not in such numbers; and upon this plant another *Eupithecia* larva occurs. It is more slender than *absinthiata*, and may be *oblongata*, though I am in hopes some of them will produce *scabiosata*, which I have frequently taken at rest here upon sheds and palings. *Atriplex* and *Chenopodium* are frequented by larvæ of *E. subnotata*, *Pelurga comitata*, *Hadena trifolii*, *H. pisi*, and *H. oleracea*; and the thistle-stems, besides having produced pupæ of *G. ochracea*, are inhabited by larvæ of *Myelophila cribrum*.—GERVASE F. MATHEW; H.M.S. 'Tyne.'

**NOTES FROM THE CHANNEL ISLANDS.**—*Pieris daphidice* has ceased to exist here now; and *Deilephila euphorbiæ* is to be found in very limited numbers. I have been informed lately by Mr. Piquet, of Jersey, that thirty years ago one might have taken any number of these insects. The case proves itself by the numbers this collector has in his possession. He has kindly favoured me with a series of both species. From this a question arises, are Jersey insects British? Morris, in his 'British Butterflies,' evidently thinks them so by the way he speaks of *P. bætica*, viz., "... as likewise in the Channel Islands, on which account also it has a claim to our list."—W. J. KAYE; Dudley House, Bagot, Jersey, Sept. 16.

**NOTES ON THE ENTOMOLOGY OF HOLLAND.**—I am forwarding you some statistics of the entomology of the Hague, where I have been chaplain during July. I am free to confess that the entomology of Holland is very disappointing in number of species and also in individuals in by far the great majority of cases; less productive, in fact, than the ordinary run of country places at home. Rhopalocera:—*Pieris brassicæ*, *P. rapæ*, and *P. napi*, abundant. *Vanessa atalanta*, possibly about twenty specimens seen, mostly in wood of royal park, one caught at Wykerbrug; *V. cardui*, one caught, the only one seen, close to Zuyder Zee, about a mile E. of Amsterdam outside the Muider Poort; *V. polychloros*, two seen, one caught at Wykerbrug, between the Hague and Leyden; *V. urticæ*, possibly four or five seen, one caught. *Satyrus semele*, possibly four or five seen, one caught at Scheveningen on the sandhills, also on the downs at Katuigli, N.W. of Leyden; *S. ianira*, possibly ten or twelve seen, Scheveningen, Wykerbrug. *Chrysophanus phlæas*, two caught, the only two specimens seen. Heterocera:—*Macroglossa stellatarum*, Scheveningen, two specimens. *Arctia menthastri*, one taken, the only one seen; *A. lubricipeda*, one taken, the only one seen. *Liparis auriflua*, about six seen; *L. chrysorrhæa*. *Plusia gamma*, fairly common, also at Scheveningen on the sandhills; *P. festuæ*. *Mamestra brassicæ*, one specimen; *M. persicariæ*. *Acronycta tridens*, two or three, also taken at Linne Straad outside Amsterdam. *Leucania phragmitidis*, *Xylophasia polyodon*, *Acronycta megacephala*, *Liparis chrysorrhæa*, *Abraaxas ulmata*, *Melanippe biriviata* (I am not quite certain of this as the specimen is worn), and *Botys urticata*, the Hague. Neuroptera:—*Æschna grandis*, the Hague and Wykerbrug. *Libellula striolata*, the Hague. Diptera:—*Calliphora erythrocephala*, *Eristalis arbustorum*, *E. tenax*, *E. sepulchralis*, *Helophilus trivittatus*, *Musca*

*domestica*, *Lucilia cæsar*, *Scatophaga stercoraria*, *Sarcophaga mortuorum*, *Hæmatopota pluvialis*, *Platychirus clypeatus*, *Syrphus ribesii*, *Leptis lineola*, *L. scolopacea*, *Ctenophora bimaculata*, *Sarcophaga* sp. incert., *Tipulidæ* two sp. incert., the Hague. *Chloromyia formosa* and *Chilosia* sp., Amsterdam. Hymenoptera:—*Bombus lapidarius*, *B. ageorum*, *Anthophora quadrimaculata*, and *Megachile* sp. incert., the Hague. *Lampronota setosa*, Wykerbrug. *Bombus agrorum*, Amsterdam; *B. lapidarius*, Scheveningen. Coleoptera:—*Aromia moschata*, Wykerbrug. *Gastroidea viridula*, *Philonthus politus*, and *Telephorus melanurus*, the Hague. *Polyphylla fullo*, *Coccinella septempunctata*, *Ctenopus sulfureus*, and *Cryptocephalus sericeus*, Scheveningen.—F. A. WALKER; Dun Mallard, Cricklewood.

LATE APPEARANCE OF *ABRAXAS ULMATA*.—When beating for larvæ in Brockley Coombe, Somerset, October 3rd, I disturbed a specimen of *A. ulmata*, evidently only just emerged. The full-grown larvæ were exceedingly abundant.—W. K. MANN; Clifton, Bristol, Oct. 19, 1892.

ERRATA.—In the note on *Colias edusa* (Entom. 220), "of six specimens taken in the Thames Valley, five were males and one female," should read "five were females and one male." P. 226, line 16 from bottom, for "seventeen-twentieths" read "seven-twentieths." P. 233, line 6 from bottom, for "specimens" read "specimen." P. 245, line 22 from top, for LANCASHIRE read LANARKSHIRE. P. 262, line 11 from top, for "Ab." read "Hb."

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—October 5th, 1892.—Henry John Elwes, Esq., F.L.S., Vice-President, in the chair. Mr. W. H. Yondale, F.R.M.S., of Cockermouth, was elected a Fellow. Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*. The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by him in the 'Entomologist's Monthly Magazine,' Oct. 1892, pp. 250–253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249–250. Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa* and the var. *helice*, and *Colias hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of the variety *helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *Colias edusa* and the var. *helice*, which was probably not exceeded in 1877. Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells. Mr. Gervase F. Mathew sent for exhibition two speci-



mens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under side of the leaves of monkshood, but that the imagos had already emerged from five of them. Mr. Rye exhibited a specimen of *Zygana filipendulæ* var. *chrysanthemi*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchloë cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth; and varieties of *Coccinella ocellata* and *C. oblongo-guttata* from Oxshott. Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis*, and var. *arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass. Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species, taken at the same time, at an elevation of about 5000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species. Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ; also, on behalf of Mr. T. Baxter, a curious *Noctua* taken on the sand-hills at St. Anne's-on-Sea on August 20th last, concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*; also a small dark form of *Orygia antiqua*, which had occurred in some numbers at Longridge near Preston. Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884. Mr. C. G. Barrett exhibited a specimen of *Syrichthus alveus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming, by Mr. O. Latter; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead. Mr. P. Crowley exhibited a specimen of *Zygana filipendulæ* var. *chrysanthemi*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes. Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvæ of *S. pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August. Mr. de Nicéville communicated a paper entitled



"On the Variation of some Indian Eupléas of the subgenus *Stictoplaea*"; and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued. Mr. W. Bateson read a paper entitled "On the Variation in the Colours of Cocoons and Pupæ of Lepidoptera; further Experiments." Mr. E. B. Poulton read a paper entitled "Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings." Miss Lilian J. Gould read a paper entitled "Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings; together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—September 22nd, 1892. — C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Robert Adkin exhibited *Oxyptilus distans*, Zell., and *O. pilosella*, Zell., taken near Dover this summer; also, on behalf of Mrs. Hutchinson, of Leominster, a small collection of Micro-Lepidoptera from Cornwall, including *Diasemia literata*, Scop., a remarkably brightly-marked form of *Herbula cespitalis*, Schiff., said to be exceedingly local. Mr. South, a variable series of *Grapholitha cinerana*, Haw., taken on the borders of Middlesex, between Northwood and Rickmansworth. He stated that the species was abundant on the trunks of two grey poplars (*Populus canescens*) at the end of July and first two weeks in August. Mr. South also exhibited *G. nisella*, Clerck., and the varieties *pavonana*, Don., *boeborana*, Fab., *rhombifasciana*, Haw.; and remarked that although some specimens of the latter species varied in the direction of *G. cinerana*, they could always be distinguished by the different shape of the outer edge of the basal patch. Two examples of *petrana*, Hüb. (= *cuspidana*, Haw.), a form which was generally considered to be a variety of *nisella*, were found with *cinerana*. As the basal patch of these specimens agreed with that of *cinerana*, he was inclined to think that *petrana* was a form of *cinerana* rather than of *nisella*. Mr. Fenn stated that both these species of *Grapholitha* were abundant on poplars in Kent. Mr. Barrett observed that he always understood that *G. nisella* was associated with willow, and that the occurrence on poplar was new to him. Mr. Fenn exhibited *Plusia gamma*, L., and a fine series of *Orgyia antiqua*, L., with dark forms. Mr. McArthur, the life-history of *Sesia scoliiformis*, Bork., from Rannoch; also *Hepialis humuli*, L., from the Shetlands, with the var. *hethlandica*. Messrs. Frohawk and Carpenter, a long series of *Vanessa atalanta*, L. Mr. Frohawk referred to the small white spot in the red band which was generally thought to indicate the female, but he showed females with and without the white spot, and one male which had this spot fairly well defined. Mr. Barren showed *Vanessa cardui*, L., *Colias edusa*, Fb., and *C. hyale*, L., taken at Blean this year. Mr. Carpenter made some observations upon the abundance of the larvæ of *V. atalanta* on Streatham Common, and remarked upon the variation in size; some were full-fed, whilst others were quite small. A discussion then ensued as to the double-

broodedness of this species, in which Messrs. Carpenter, Tutt, Fenn, Barrett, Carrington and Frohawk took part.

October 13th.—The President in the chair. Mr. James, of Uphill, Folkestone, was elected a member. Mr. Adye, on behalf of Mr. W. MacRae, exhibited large numbers of *Colias hyale*, L., *C. edusa*, Fb., and var. *helice*, Hb., a portion of the result of five days' collecting in the neighbourhood of Bournemouth and Christchurch; and Mr. Adye read some notes as to the proportions in which *helice* and *hyale* occurred as compared with *edusa*; he also expressed an opinion that the explanation of *edusa* not occurring two years in succession was principally due to the ova, which he stated were always laid on the upper surface of clover-blades, being destroyed by the grazing of sheep and cattle, and the action of mowing machinery. A discussion followed, and the members taking part therein were of opinion that this explanation was entirely inadequate. Mr. Adye also exhibited living larvæ and pupæ of *C. edusa*, and two specimens of *Deiopeia pulchella*, L., from Christchurch. Mr. Henderson also showed a specimen of this species, taken by him at Hayling Island. Mr. Dennis, a variety of the under side of *Lycæna bellargus*, Rott., the ground colour being white, and the marginal spots only represented. Mr. B. W. Adkin, a series of *Epinephele ianira*, L., from Scilly, the males having the orange blotch on the fore wings, and the females the fascia on the hind wings, very pronounced. Mr. Fenn, *Lithosia muscerda*, Hufn., from Sandwich; a beautifully banded example of *Acidalia aversata*, L.; and a box of examples of *Vanessa urtica*, L., picked from between four and five hundred, and showing very slight variation. Mr. Tugwell, a specimen of *Melanippe hastata*, L., with the usual central fascia reduced to a spot; varieties of *Colias edusa*, Fb.; and a pale series of *Hypsipetes ruberata*, Frr., from Hartlepool. Mr. C. G. Barrett, forms of *Polia chi*, from Sheffield; a dark variety of *Argynnis euphrosyne*, L., taken by Mr. Oswald Latter at Godalming; and specimens of *Syrichthus alveus*, Hub., taken by the Rev. Mr. Marsh in Norfolk; also dark specimens of *Eugonia quercinaria*, Hufn., bred from ova obtained from a female taken at Nunhead. Mr. Oldham, among others, dark varieties of *Acidalia bisetata*, Hufn., male of *Odonestris potatoria*, L., of the colour of the female; *Nonagria canna*, Och., and pupa-case. Mr. Frohawk, a specimen of *Sesia sphegiformis*, Fb., and stem of alder with pupa-case projecting, and remarked that the day before the insect emerged the pupa broke through the bark and remained a short time in the sun, subsequently withdrew, and did not emerge until the following day. Mr. R. Adkin, a series of *Vanessa c-album*, L., consisting of specimens reared from larvæ received in June last, and others of the same brood received as imagines from Mrs. Hutchinson, of Leominster, together with a series of the autumn brood; also a female example of the spring brood, having the under side coloration of the autumn brood, but resembling the form of the earlier emergence on the upper side; and he read notes referring to the known differences in the colour of the under side, pointing out a distinction in the markings on the upper side of the two broods. He also exhibited a series of *Dianthocia nana*, Rott., from the Scilly Isles, with examples from North Devon and the North of Ireland for comparison. It was pointed out that one of the specimens from Scilly closely resembled the supposed



Irish *D. compta*, Fb. Mr. Tutt mentioned that the *Botys* exhibited at a previous meeting was *Botys fuscalis*, Schiff., and was not therefore a new species, as had been suggested at the meeting and so reported.—H. W. BARKER and A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—Oct. 10th, 1892.—Mr. R. C. Bradley in the chair. Mr. A. W. Walker, Ingleside, Harborne Road, Edghaston, was elected a member. The following were exhibited:—By Mr. P. W. Abbott, *Colias edusa* from Wyre Forest, one specimen; *Triphana subsequa* from Freshwater. Isle of Wight; and *T. orbona*, for comparison with them. Mr. E. W. Wynn, from Wyre Forest, bred series of *Vanessa io* and *V. c-album*; two bred *Notodonta chaonia*, and a single specimen of *Sesia cynipiformis*: also, from Cannock Chase, a bred series of *Vanessa cardui*, and one *Colias edusa* from Meriden, near Coventry. Mr. R. C. Bradley, nice series of *Philonicus albiceps* and *Thereva annulatus* from Barmouth. Mr. W. Harrison, insects taken at Frankley, near Harborne, quite close to Birmingham, including *Cidaria testata*, *Thyatira derasa*, &c.; also, from Wyre Forest, *Eucosmia undulata*, one *Phorodesma bajularia*, &c. Mr. A. H. Martineau read a paper on the social ants, in which he gave some account of the various species, and of the most interesting facts in their life-histories, habits, &c. He showed nests of *Lasius flavus*, *L. niger*, and *Myrmica ruginoides*, with many individuals in each; also mounted specimens of several other species.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 10th. —Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. J. T. Moore, A.L.S., was elected an honorary member, and Mr. J. H. Stott, of Newcastle, Staffordshire, an ordinary member of the Society. Mr. S. L. Mosley, of Huddersfield, read a paper entitled "Vegetable Galls and their makers." The author referred to the difficulty in breeding these insects, and spoke of the theory of the ancients, who, because they could not understand how a caterpillar could be inside a gall which had no opening, believed that the egg must have been deposited in the seed of the plant. He remarked on the scarcity of literature on the subject, and described and exhibited specimens of many of the galls and their makers, including some species new to Britain. The President exhibited a rich variety of *Epione apiciaria*. Mr. Arkle, *Heliothis armigera*, bred from imported tomatoes. Mr. Collins, some nice forms of *Acronycta leporina*. Mr. Gregson, series of *Agrotis ashworthii*, *Polia nigrocincta* and *Dianthæcia casia*, bred and captured by himself this year. Mr. Harker, two specimens of *Hadena satura* from Aberdeen. Mr. Jones, Lepidoptera captured in Ireland, including some nice Irish forms. Dr. Ellis, series of *Cassida sanguinolenta* and *Bembidium saxatile*. Mr. Newstead drew attention to a record of *Polymnatus bætica* captured at Heswall, Cheshire, by Master McFee, in 1886 or 1887, which had lately come under his notice.—F. N. PIERCE, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—October 12th, 1892.—Mr. G. C. Dennis, President, in the chair. Mr. George Jackson exhibited a number of very fine varieties of *Abraaxas grossulariata*, bred this season from larvæ obtained at York. Mr. E. G.



Potter, *Colias edusa* (including a specimen of the variety *helice*) from Sandown, Isle of Wight, 1892; *Zygæna meliloti*, *Boarmia roboraria*, *Hyria auroraria*, from the New Forest, &c. Mr. Robert Dutton, *Agrotis obelisca* from the Isle of Wight; *Colias edusa* from Sidmouth, 1892; and *Boarmia cinctaria* from the New Forest. Mr. W. Dutton, *Arctia fuliginosa* from the Isle of Man; *Notodonta carmelita* from Marlow; *Trichiura cratægi* from Wolverton; *Noctua sobrina* from Aberdeen, 1891; *Agrotis saucia* from the Isle of Wight, and *Dianthæcia nana* from Aberdeen. Mr. W. Hewett, *Colias hyale* from Dartford; a fine variety of *Vanessa atalanta* (bred) from Canterbury; very dark specimens of *Agriopsis aprilina* (bred) from Durham; *Epunda lutulenta*, and its var. *lunenburgensis*, from Sligo; also *Stilbia anomala* from Sligo; *Cloantha solidaginis* from Derneleugh, Aberdeenshire; fine forms of *Xanthia cerago* (bred) from sallow-catkins obtained at Bishop's Wood, Selby; thirty-one specimens of *Polia chi*, including several of the var. *olivacea* from Durham, var. *obscura* from Mr. Mansbridge of Horsforth, and numerous intermediate forms connecting *olivacea* and *obscura* with the type, from Durham, Nottingham, Aberdeen, Kirkham Abbey (Yorks.), Horsforth and York; dark specimens of *Cidaria immanata* from Inverurie; and *Cidaria russata* from Linlithgow; also two lead-coloured varieties of *Melanthia rubiginata* from Linlithgow.—WILLIAM HEWETT, *Hon. Sec.*

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## REVIEWS.

*A Synonymic Catalogue of Lepidoptera Heterocera* (Moths). By W. F. KIRBY, F.L.S., F.E.S., &c. Vol. I. Sphinges and Bombyces. 8vo, pp. xii, 951. London: Gurney & Jackson, 1, Paternoster Row. Berlin: R. Friedländer & Son. 1892.

As early as 1877 Mr. Kirby announced, in the preface to the Supplement of his 'Catalogue of Lepidoptera Rhopalocera,' that he was preparing a similar work on the 'Moths of the World.' The long time which has elapsed before the appearance of the first volume of this work is hardly to be wondered at, when we regard the great extent and difficulty of such a labour. The volume before us contains only the Sphinges and Bombyces, 29 families in all, some of which are divided into subfamilies. Some families of doubtful position, which are frequently placed with the Sphinges or Bombyces, such as the *Ægeriidae* and *Thyrididae*, have been omitted, as well as certain others which undoubtedly do not belong here, *e.g.*, the *Euschemidae* and a large portion of the *Melameridae*, which have been proved by the metamorphoses really to belong to the Geometræ, as well as the types of the old family *Chrysangidae*, which are now usually classed as Pyrales. The author has, on the other hand, retained the anomalous family *Uraniidae*, in the present volume (although it rather interrupts the sequence of families), obviously by reason of the affinities of the larvæ, with those of the *Agaristidae*, &c. We quite concur with him in this arrangement, and it is a source of the greatest wonderment to us that any authors of the present day should still con-

tinue to follow the antiquated arrangement of Guenée in placing them beside the Geometræ.

Much yet requires to be done, before even an approximate natural classification of the Moths shall have been arrived at; and extensive and numerous changes must, naturally, precede this desirable result. Hence we anticipate that many genera, and possibly even families, now included among the Sphinges and Bombyces, will eventually be shifted into different positions. There remains, probably, also, much to be done in eliminating synonyms.

How far Mr. Kirby is correct in placing the true *Sphingidæ* between the *Notodontidæ* and *Bombycidæ*, instead of at the head of the series, remains to be seen. It may interest British entomologists to note that *Endromis versicolor* is here put into the small family *Bombycidæ*, with *Bombyx mori* and its allies.

Part of the preface is taken up with Mr. Kirby's exposition of the rules which he has followed *re* the vexed question of nomenclature, on which we fear opinion will long remain divided.

Notwithstanding the occasional errors unavoidable in a work of such dimensions (and it is only fair to the author to say that in glancing through the book we have noticed none of any importance), the extreme usefulness of a work such as the one before us, to all students of Lepidoptera, cannot be over-estimated.

According to the scheme announced in the preface, the work is to be completed in five volumes:—I. Sphinges and Bombyces. II. Noctuæ. III. Geometræ and Pyrales. IV. Micro-Lepidoptera. V. Appendix, up to date, and general index of genera and species.

We learn, also, from the same source, that the remainder of the work is in an advanced state, but even so, considering the expense of publication and the time required to prepare so large a mass of material for the press, we fear that some years must elapse before this Catalogue can be completed.

*Rhopalocera Exotica; being Descriptions of new, rare, and unfigured Species of Butterflies.* By H. GROSE SMITH & W. F. KIRBY. Vol. I.; with 60 hand-coloured plates. 4to. London: Gurney & Jackson. 1887—1892.

For many years Hewitson's great collection of Lepidoptera, now in the British Museum, remained unequalled in the world, and its treasures were illustrated by him in his well-known beautiful works, 'Exotic Butterflies,' and 'Illustrations of Diurnal Lepidoptera.' Since his death, large collections of butterflies have continued to be received from all parts of the world, and two of his surviving friends have undertaken the present work, in order to present the scientific world with a series of illustrations of rare and beautiful species (chiefly selected from the rich collection of Mr. Grose Smith), in a style nearly uniform with Hewitson's 'Exotic Butterflies.'

Certain alterations will be noticed in the arrangement of the book; thus, instead of the letterpress belonging to each plate being limited to a single unpagéd leaf, it is allowed to extend to as great a length as is necessary to fully describe all the species figured. Again, the pagination is made consecutive throughout each separate genus, or at least family, illustrated.

The authors confidently expect to find ample materials to continue the work as long as they feel inclined to do so.

The volume before us contains careful figures and descriptions of nearly 200 butterflies belonging to the families and subfamilies Papilionidæ (Papilioninæ and Pierinæ), Nymphalidæ (Danainæ) Acraïne, Heliconinæ, Nymphalinæ and Morphinæ), and Lycænidæ. Among them are some extremely remarkable and beautiful species, such as *Ornithoptera victoriæ* and *Morpho helena*; but the most valuable part of the book, from a scientific point of view, is perhaps the section on the hitherto little known or studied groups of African Lycænidæ, to which 17 out of the 60 plates are devoted, illustrating nearly half the total number of butterflies described in the volume. By far the larger proportion of the species figured in other parts of the work are likewise from Africa or Madagascar.

We may add that the work is being continued in quarterly parts, each containing three coloured plates of butterflies with the accompanying letterpress.

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#### OBITUARY.

WE regret to record the death of MR. HOWARD W. J. VAUGHAN, which occurred at Woodford Green, Essex, on the 18th of October, 1892, in his 47th year. Mr. Howard Vaughan was born at Hackney, on the 18th April, 1846, and was educated at private schools. He adopted the law as a profession, being admitted a solicitor in 1869, in which year he also joined the Entomological Society of London. On his parents removing to Kentish Town in 1860, he made the acquaintance of Dr. H. G. Knaggs, whose house at that time was one of the chief entomological centres, and he consequently, at a comparatively early age, found himself in the full tide of London entomology. Although he had some knowledge of Coleoptera, his chief study was Lepidoptera, of which Order (excepting the Tineæ) he amassed a singularly rich collection, his Tortrices being especially fine. He was an ardent collector, and was the means of introducing *H. saricola*, *H. senecionis* and *T. pryerella* to our lists, but the first-mentioned has failed to retain its rank as a species. As a rule, however, he was diffident in recording his discoveries, frequently allowing others to reap the honours to which he was entitled. For some time, in conjunction with Mr. Lovell Keays, he edited the entomological department of 'Young England,' the popular periodical in which the publication of Newman's Moths was commenced. In the winter of 1889-90, a fit, rapidly followed by others, warned him that his end was probably approaching; and in April and May, 1890, his collection was sold at Stevens's, several of the lots fetching unprecedented prices, the gross total of the three days' sale being £831 18s. After his seizure in 1880-90, he never was really well, and, slowly breaking, ultimately died, after a few days' illness. His remains are interred in the City of London Cemetery at Ilford, Essex. Those who knew him in his former years, and especially the few who shared in his collecting excursions, will mourn the loss of a genial friend and enthusiastic entomologist.—C. A. B.



# THE ENTOMOLOGIST.

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## EDITORIAL.

THE present number completes the twenty-fifth volume of the 'Entomologist,' and in this connection it may be interesting to note that exactly fifty years ago the concluding number of volume I. was published.

Although this Journal has been before the entomological public since 1840, it has only just now completed its twenty-fifth volume. The reason of this is twofold. In the first place the 'Entomologist' was for twenty-two years merged in the 'Zoologist'; secondly, several of the earlier volumes comprised two years.

Putting aside volume I. (1840-1842), the fact remains that of the magazines devoted to the consideration of insects published in Great Britain, the 'Entomologist' is the oldest extant, and still maintains the high position it has held for so long a period.

The volume for 1892 is in all respects a worthy companion of those of previous years; and this satisfactory result is largely due to the valuable assistance rendered by numerous contributors and correspondents, to all of whom we take this opportunity of tendering our sincere thanks.

Although extra pages have frequently been furnished during the year, we have been unable to fully meet all the demands upon our space, and consequently have often been obliged to postpone the publication of important papers.

It seems highly desirable that the number of pages in each monthly issue should be permanently increased; but, unfortunately, this is not practicable just at present. If, however, all

those who have so cordially assisted the 'Entomologist' in the past will kindly continue to give us their support, and, may we venture to suggest it, use their influence to increase the circulation of the Journal, why then it may be possible for us to give 28 or 32 pages every month, instead of the usual 24 pages.

In the new volume for 1893 it is proposed to make some alterations in the arrangement of contents. Thus, for example, the various items which now find a place under the general heading, "Notes and Captures," will be grouped under special heads.

It will be noticed that in the present volume (and also in those for 1890 and 1891) the index has been considerably amplified, thus adding to the usefulness of the work without increasing the cost to subscribers. It was not thought necessary to index every species mentioned in the volume, but none of interest have been omitted.

We are glad that the Exchange department continues to be useful to a large number of our readers. Lists of duplicates and desiderata are always welcome, and, if possible, will be inserted in the issue for the month following that in which they are received. It may be added that only notices sent to us for publication appear in the exchange pages.

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## THE EMERGENCE OF THE CERURAS.

By T. A. CHAPMAN, M.D.

In the 'Entomologist,' vol. xxiii. pp. 91—94, I referred to this subject in connection with the remarkable habits of *H. mil-hauseri*, especially with a view to questioning whether some beginnings of the structure and habits of that species might not exist in the *Ceruras*. Last spring I obtained some pupæ of *C. vinula*, in hope of learning something more; and though I observed little that is not well known, I may put my notes together, as science is so long and life so short, that a slight advance may be worth maintaining. I was only successful in observing two or three emergences, and only one of these at what was the critical moment, and in this case I interfered so as to spoil the observation, the chief further knowledge gained being that I *had* so interfered.

Some pupæ are able to turn round in their cocoons, but I think the majority have their backs to the tree and their fronts to

the exposed portion of cocoon, and are practically fixed in that position. Then all the cocoons I have examined (thirty or forty) have a decidedly thinner place over the front of the head; it is larger than the cross section of the pupa; it contains fewer chips, and, held against the light, is quite translucent, whilst the rest of the cocoon is opaque; this is the portion of cocoon that is operated on for emergence.

I stated (*loc. cit.*) that the pupæ of our *Ceruras* were fairly rounded in front; in this I was decidedly in error, for *vinula* has nearly as pronounced a keel on the head as *C. multiscripta*, to which I referred. Our "kittens" are much smoother, though the same structure is indicated. It was observing this structure of *vinula* that tempted me to try to make further observations. I made a detailed description of this portion of the pupa of *vinula*, but I may omit it, as I made no observations that connected any habit with any peculiarity of this portion of the pupa.

The dehiscence of the pupa consists in the thorax splitting dorsally, and the division proceeding to either side separating the wings from the first three abdominal segments; the antennæ cases sometimes adhere to the wings, sometimes separate; the leg and mouth part coverings form a separate piece, whose apex tends to adhere to wings and abdomen. But the head-covering, consisting of the ridge (or keel) and hollow on either side of it, the eye-covers (including the glazed side portion), the face down to a certain incision, and a small portion below which is probably the labrum, separates as a distinct portion, and adheres to the moth in its proper position, during the whole period of emergence and until the head is quite clear of the cocoon, and often even after the moth has completely escaped, and is always found outside the cocoon. During this period the rudimentary proboscis is very visible as two short white papillæ, free from any hairs, and it is just above the base of these that the softening fluid exudes. This fluid is stated to be acid; this I did not test, but I found it to be colourless and tasteless, and it evaporated without residue; applied to the material of cocoon it softened it, but not at all rapidly. The moth makes many rotatory movements after the splitting of the pupa case, no doubt in order to smear this fluid over the necessary area of the cocoon, and we here see how little further is wanted to reach a habit similar to that of *milhauseri*, especially as the smearing process and delay for softening takes a considerable time, probably more than five minutes, possibly half an hour. This appears also from the amount of fluff rubbed about inside the cocoon in many cases. The moth keeps quite dry, and the head-cover is dry outside, but moist within, when removed from the newly-emerged moth; its function appears to be to protect the front of the moth during the movements of smearing, and as a strong medium for applying the final breaking



force to the cocoon. This use of this portion of the pupa-case is by no means confined to *Cerura*, but is common to many moths that have to break through cocoons or out of the ground. It has, however, nothing to do with the actual distribution of the fluid, so far as my observations were decisive. I made one other observation that added a new point to be explained, *viz.*, that when the moth emerged it often brought with it pieces of very delicate tissue that I passed over at first as being portions of the inner divisions of the pupa-case; they proved, however, to be bits of the inner lining of the cocoon. The wall of a sound cocoon appears to be homogeneous; but in a cocoon where I stopped the moth before breaking it open, but after softening it, this inner layer of very fine membrane is quite visible. I could not help framing several theories as to this, but as I know no more than I have stated, the theories may for the present remain in abeyance.\*

Firbank, Hereford, Oct., 1892.

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## DESCRIPTION OF A NEW SPECIES OF *ELATER*.

By REV. H. S. GORHAM, F.Z.S., &c.

### *ELATER MINIATUS*, n. sp.

*Elater pomonæ*, Waterh., Trans. Ent. Soc. v., n. s., p. 90;

Rye, Ent. Mo. Mag. ix. p. 268; Ent. Ann. 1874, p. 97.

*Elater pomonæ*, Candeze, Mon. Elat. ii. p. 455; Seidlitz,

Faun. balt. p. 119; *nec* Stephens, Mand. iii. p. 257; Man.

Brit. Col. p. 179.

*Ater*, nigro-pilosus, elytris coccineis, prothorace nitido minus dense punctulato, basi transversim impresso, supra scutellum foveolato, antrorsum angustato, tarsis rufis. Long. 9—10 millim.

This is the species generally known to us as "*Elater pomonæ*," and apparently regarded as such by Candeze, Seidlitz, and others, perhaps on the authority of Mr. G. R. Waterhouse; but Mr. E. C. Rye, now nearly twenty years ago, pointed out the discrepancies between Stephens' description in the 'Manual of British Coleoptera' and the specimen regarded by Waterhouse as its exponent in Stephens' collection. There was, however, it should have been observed, a specimen in the same collection, and under the name "*pomonæ*," which perfectly accords with

\* I do not know that my observations confirm or otherwise Mr. Latter's discovery that the softening fluid contains hydrate of potassa; but the tastelessness of the fluid, the trifling residue on its evaporation, so that a drop on a glass-slide left barely sufficient trace to show where it had been, and more particularly the rapidity with which it evaporated to absolute dryness (potash hydrate being deliquescent), appears to point to the necessity for further research on this as on other parts of the subject.—T. A. C., Nov. 15.

Stephens' description, and has been, and probably correctly, referred to *E. præustus*, Fab.

*Elater miniatus* is at once distinguished from this species, or from any other species except *Elater sanguineus*, Lin., by the fact that the thorax is clothed with black pile, and that the elytra are red, without the least sign of black tips. From *E. sanguineus*, I imagine the size alone is sufficient to separate it, and no one has, as far as I am aware, referred it to that species.

Although Rye appears to have received small specimens of *E. lythropterus* from the New Forest, from Turner, I have not myself seen such. *E. miniatus*, under the name of "*pomona*," is now, according to my experience, the commoner species near Brockenhurst, where I have obtained it from Mr. Gulliver, and have also met with it on several occasions, but it is (as indeed at the present time any "*red Elater*" is) far from common. Nine specimens are now in my collection, and I may have given away one or two; and these are all I have obtained, and I have not seen it from other places. Mr. Rye considered this was the species obtained by Hardy in Sherwood Forest. In the face of the fact that neither Candeze nor Seidlitz recognised this as a new species, if indeed they have seen specimens of it at all, and that (see Rye) Thomson referred it to *pomorum*, I think any statement as to its occurrence on the continent will require corroboration. The sculpture of the thorax—which in *E. lythropterus* is a close, almost confluent somewhat granular punctuation, but here is a much more sparse, distinct puncturing, with a shining smooth interstitial surface—will probably be found of most use in separating it from other allied species. It should be also observed that Stephens expressly says his "*pomona*"—and which appears to be a single specimen of *E. præustus*—came from Darenth Wood. Barmouth is only given on Hope's authority, and may of course refer to some other species. I have not myself seen any other example of the true *E. præustus*, which is, at all events, a very scarce species in this country.

Shirley Warren, Southampton, Nov. 4, 1892.

## INDOOR LIGHT.

BY MAJOR JOHN N. STILL, F.E.S.

It is not to be supposed that this form of using light, as an attraction for insects, is equal to systematically arranged outdoor light; at the same time, it has many advantages over the latter. There are some persons who can with safety employ indoor light, who dare not, for various reasons, venture to stand about in woods, fens, or under lamp-posts by night. Besides, the convenience of

using indoor light is great; the window is easily lighted up, and again extinguished if not attractive, and all the necessary paraphernalia is at hand. Various are the modes and apparatus used; and although every collector may employ those means which his fancy dictates, from the solitary candle to the electric light, I shall only describe the light which I have used, and the rules which have guided me for some years, with success, in various country districts.

*The Room.*—When available, an empty room is the best, with white walls; if there are two windows in it, either light up both or darken one; but two windows having different aspects are excellent, if both are lighted, and plenty of help present. There must be no window of another room, facing the same direction, with a light showing; any outside light is fatal, either from other houses or gas-lamps.

*The Window.*—This should always be an upstairs one, but not over a glass verandah or conservatory, as these cause reflection, and the moths are apt to settle on the glass, and not come up to the light. Sash-windows are the best, but I have used French windows on the ground-floor successfully enough. When a bow-window is used the sides must be darkened. Some of the most prolific nights that I ever had were in a large whitewashed stable-loft, with the window taken bodily out. Casement-windows are the most unsatisfactory. Whatever kind of window is used, I find it best to have it as wide open as possible, and let the insects come well into the room, when they can be either netted or boxed at once.

*The Situation.*—The window should overlook as open an extent of lawn, field, or moor as can be obtained, and if there is a wood in the vicinity, so much the better. The aspect of the window is of no great importance; I have, however, found N. and W. the best.

*The Light.*—Outside and just under the window I hang one of Messrs. Watkins and Doncaster's excellent benzoline lamps; on each side (also outside), a strong carriage-lamp; on a small table, placed opposite the centre of the window, a lamp with a most powerful reflector; and immediately behind this, but standing higher, a lamp of fifty-candle power. These together throw an immense volume of light; every shrub, conifer and hedge within two or three hundred yards throws its shadow, and the light is seen at a great distance, the outside lamps extending widely the semicircle of light. My experience has been that the stronger the light the greater the result. Always have another lamp on the wall opposite the window, as moths when in the room will at once fly towards it. Be most careful to see that there is no oil on the outside of the lamps, and use wire-gauze tops over the chimneys.

*The Time.*—May 15th to 31st, 10 p.m. to 12; June, 11 p.m.



to daylight; July, 11 p.m. to daylight; Aug. 1st to 15th, 10 p.m. to 1 a.m.; Aug. 15th to Sept. 15th, 9 p.m. to 12.

*The Night.*—The uncertainty of the result of using indoor light must be plain to those who have tried it. It is quite impossible to foretell a good night. Great results will only occur occasionally, and to those who use perseverance with their oil. On warm, dark, quiet nights, the greater the chance, but often such nights are a failure. Again, excellent results are frequently obtained on a moonlight night, darkened occasionally by passing clouds; dark nights with warm summer rain are good, and even with heavy rain, particularly after a drought. The slightest frost renders light useless. Hill-mists sometimes are good, but fogs are bad. Wind is the greatest enemy of light; however favourable in all other respects, anything like wind renders the attempt hopeless. Besides Lepidoptera, many orders of insects are represented on a good night at light, and it is most interesting to note the time of arrival of the various species, as well as their behaviour in the room. Sphinges fly up and down the walls. Most of the Bombyces, Noctuæ, and large Geometræ dash past the light and circle round and round the ceiling. Some Noctuæ settle at once anywhere; others seek concealment by hiding behind pictures, shutters, &c. The smaller Geometræ fly round about the lights; while the Pyralides, Crambi, Tortrices, and Tineæ settle on the lamps, or where the light is thrown on the table, walls, or window. Some species rarely enter the windows, but fly up to the light and depart again; these I have had to net by means of a ladder outside. If the walls of the house and crevices of the windows are examined next day, some of the last night's visitors are usually to be found there at rest. Bats hawk backwards and forwards in front of the window, destroying no doubt many a prize. There is a vast amount of pleasure and excitement, as well as knowledge, to be derived from a first-rate night at indoor light. I well remember persuading a non-collector to try it one night in the country, and he reluctantly accepted the invitation. Within a short time of commencing operations, his pipe was thrown down, and he was rushing wildly about, with his coat off, netting moths, and, remaining until daylight, he proved himself to be an invaluable auxiliary.

Horrabridge, November, 1892.

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COLIAS EDUSA, *C. HYALE*, &c., IN ENGLAND IN 1892:  
ADDITIONAL RECORDS.

(Concluded from p. 282.)

*Shropshire.*—I have seen two specimens of *C. edusa* close to Market Drayton, one on the 6th of June and the other on Sept. 27th.—F. C. WOODFORDE; Market Drayton.

A rather small specimen of *C. edusa*, measuring only  $1\frac{3}{4}$  in. across the widest part, was taken in a field on Sept. 17th. It was the only one seen by me in the neighbourhood.—E. H. BLACKMORE; 13, Bull Ring, Ludlow, Salop.

*Somerset*.—*C. edusa* has appeared in fair numbers in this district. The first specimen I observed was a male in good condition on the 24th of July.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath, Sept. 12, 1892.

*Staffordshire*.—A female specimen of *C. edusa* was captured close to the town of Cheadle, about the middle of last June.—E. W. H. BLAGG; Cheadle, Staffordshire, Sept. 20, 1892.

*Suffolk*.—Two specimens of *C. edusa* were seen at Southwold, Suffolk, on the 1st of September.—WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

*C. edusa* has occurred in quantities here, and *C. hyale* in plenty. I never saw so many butterflies of the common sorts as there are this year.—RENDLESHAM; Woodbridge, Sept. 4, 1892.

Since my note in October number *Colias edusa* has been taken in large numbers by a cousin of mine at Waldringfield near Woodbridge. Among them were eleven specimens of the variety *helice*, varying considerably in tint. *Colias hyale* appeared in fair numbers, and in a series of twenty-five taken, yellow, white, and intermediate forms were shown. One very small specimen was taken. One male *edusa*, although quite fresh, has the wings very thinly scaled, giving it a pale appearance; and the black spot on the fore wings, on being held up to the light, is almost transparent.—RUSSELL E. JAMES; Chesterville, Hornsey Lane, N., Sept. 14, 1892.

I saw one specimen of *C. edusa* in a sand pit near here on July 29th. On Aug. 9th I took four on a railway bank near Wickham Market Station, and since then it has been very plentiful. Males have been more numerous than females. I have not seen *C. hyale*, but I hear two or three have been seen in this neighbourhood; var. *helice* I have neither seen nor heard of. *Vanessa cardui* has been very common, and I have counted as many as five specimens of *V. atalanta* on one bunch of thistles. I took three specimens of *V. polychloros* during August. *Plusia gamma* has been a perfect nuisance here.—RANDOLPH L. HODGSON; Campsea Ashe Rectory, Wickham Market, Sept. 14, 1892.

Whilst driving with Sir W. Hyde Parker and Mr. L. G. Fisher, of Long Melford, between Melford and Cavendish, on 11th August last, we saw a specimen of either *C. hyale* or *C. edusa* var. *helice*. Coming back to Ipswich, *viâ* Bury St. Edmunds, I saw *C. edusa* on the railway banks. The next day I saw *C. edusa* again on the railway banks on the way to Southwold, and I saw specimens again at Southwold. I believe *C. edusa* has been plentiful nearly all over Suffolk, and about a fortnight ago I saw a specimen in the town here.—E. F. BISSHOPP; 32, Museum Street, Ipswich, Oct. 6, 1892.

*Surrey*.—I have not done much Entomology, but I have seen five or six stray specimens of *C. edusa*, near Stoke D'Abernon, Surrey, between August 5th and 27th, where, I do not believe, it has been seen since 1877. On August 20th I went to Box Hill, and found *C. edusa* fairly numerous. I also took one *C. hyale* and a splendid specimen of *helice*.—WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

On the 15th August I observed a very fine specimen of *C. edusa* flying along the railway bank on the Croydon side of Anerley Station, and on the 20th August I netted one fine female on a hill near Dorking, and saw one

male on the same hill on the same day. I cannot quite agree with the editorial note that the present year bids fair to rival that of 1877; at all events, so far as I am personally concerned, it certainly will not, for I find, upon referring to my diary of that year, that my son and myself, on the 4th and 6th August, netted, in one clover field, 215 *edusa* and 11 *helice*. — W. D. CANSDALE; Sunny Bank, South Norwood, S.E., Sept. 3, 1892.

*C. edusa* has been abundant here, and I took one var. *helice*. About Aug. 26th *Drepana falcataria* and *D. lacertinaria* came to light. Is this usual? *Plusia gamma* has been very common, unusually so. — ANANDA COOMARA SWAMY; Walden, Worplesdon, Guildford, Sept. 3.

I took one *C. edusa*, a male, at Dorking on May 28th, and saw another a few days afterwards. I heard of some four or five others having been seen in the neighbourhood. On June 15th I took a worn female at Marlborough. Since the 6th of August I have taken ten, six males and four females, all in splendid condition, in one field not more than a mile from the parish church at Dorking. — FREDERICK FLOOD; Denfield, Dorking, Sept. 16, 1892.

During the last half of August, I found *C. edusa* common in the clover fields, &c., in the neighbourhood of Leatherhead. They were accompanied by large numbers of the "whites" and *Plusia gamma*, *Vanessa cardui* being also common. One specimen of the var. *helice* of *C. edusa* fell to my net, and one *C. hyale*. *C. edusa* are getting scarce and much worn; *V. atalanta* is appearing in unusual numbers. (At p. 221, line 15, for "Selcombe" read "Salcombe"). — R. M. PRIDEAUX; Ashted, Epsom, Surrey, Sept. 20.

As early as June 4th I netted one *C. edusa* on the railway bank between this and Epsom; on the 4th July two in the same place; and from that time till the close of August they were very common, as my brother Mr. S. Kaye has informed me. — W. J. KAYE; The Court, Worcester Park, Surrey, Oct. 15, 1892.

On Sunday, 14th August, I journeyed down to Caterham Valley in search of *C. edusa*. It was a beautiful sunny morning, though a boisterous wind was blowing, which made running after such insects as *edusa*, on loose and stony ground, rather irksome. However, I managed to net eight very fine examples of this lovely butterfly, seven being males and only one female. I went down again on the following Sunday, with the result that I captured twenty-five specimens, only three of which were females. It struck me then as being very odd that the number of males should be so greatly in excess of the females, but during the last few weeks the sexes have appeared in fairly equal numbers. Nearly all the girls and boys whom I met out on the hills with their nets appeared to have one or more *C. edusa* in their boxes. The insect is now very much scarcer; indeed, on Saturday, Sept. 17th, I only saw nine examples in all, four of which I took. On this same date I was fortunate enough to take four beautiful specimens of *C. hyale*, two being found in cop. on a long stalk of dry grass. This insect (*hyale*), I understand from entomologists who reside near this delightful valley, is generally taken every season, though very sparingly. — F. J. ROBINSON; Surrey Cottage, Water Lane, Brixton, S.W., Sept. 26.

*Sussex*. — I can fully endorse Mr. W. W. Esam's statement as to the abundance of *C. edusa* and *Vanessa cardui* in the neighbourhood of Eastbourne. During my visit, the middle of last month, I secured four specimens of the var. *helice* of *C. edusa*, and saw two others; I also caught a very prettily-marked female, in which the light markings in the borders of both wings are more numerous and pronounced than usual, and form a con-



tinuous series of spots; the margins of the wings also appear to be rather more rounded than usual.—HENRY D. SYKES; The Cedars, Enfield.

At Bognor, Sussex, during August, *C. edusa* was very abundant in most of the fields where the ragwort was in flower. Of forty specimens of *Colias* that I took, eighteen were males, sixteen females, four very good specimens of var. *helice*, and two of *C. hyale*. One of the females was without the usual yellow spots on the border of the wings. One male measured a little over an inch from tip to tip of its wings. *Macroglossa stellatarum* was very abundant also. *Vanessa atalanta*, *V. io*, and *V. urticae* were very plentiful, but *V. cardui* was very scarce. *Plusia gamma* was extremely abundant. Among the geometers, I took *Eupithecia coronata*, *Thera firmata*, *Melanippe procellata*, *M. unangulata*, *M. galiata*, and a rather worn specimen of *Anticlea derivata*, &c. Of the Noctuæ, *Triphæna interjecta* was fairly common in a lane near Bognor.—HERBERT C. GENTRY; Marian House, Goulton Road, Lower Clapton, Sept. 3, 1892.

I found *C. edusa* very plentiful during August in a clover field at Forest Row, on the borders of Ashdown Forest, Sussex, and I caught over two dozen, four being females; but no *helice* or *hyale*. Mr. B. C. Hartley, of West Dulwich, showed me one specimen of *helice* and two of *hyale* caught by him near Washington, Sussex.—R. A. DALLAS BEECHING, F.E.S.; Tunbridge Wells.

On the Sussex coast, between Worthing and Littlehampton, *C. edusa* has been very common throughout August, my brother and I netting a nice long series, including four var. *helice*, on the morning of the 10th, all in perfect condition. They were about in hundreds, and we had no trouble in capturing them, as they were continually flying past.—HUGH E. HOPKINS; 153, Camden Grove North, Peckham, S.E., Sept. 3, 1892.

I had the good fortune to take two specimens of *C. hyale* in the neighbourhood of Eastbourne last week. I also saw two more specimens in the boxes of other collectors, captured in the same neighbourhood.—HENRY D. SYKES; The Cedars, Enfield, Aug. 23, 1892.

In such a truly "*edusa* year" as the present one has proved, it may perhaps be hardly worth while recording the appearance of this butterfly. I had heard the reports during the summer of the unusual abundance of specimens in various parts of the country, but was quite unprepared, when I arrived here about the middle of August, to find them in such phenomenal numbers. On the downs they seemed quite as plentiful as the common whites, and I was frequently gladdened by the sight of a clouded yellow careering along the Brighton streets. I have only had three or four days' collecting, but was fortunate enough to secure a lovely example of the female variety *helice* at Polegate, and two more in this neighbourhood. *Vanessa cardui* has turned up again in great quantities after an absence of several years.—W. H. BLABER; 34, Cromwell Road, West Brighton, Sept. 17, 1892.

*C. edusa* has been very common here in the meadows and gardens on the downs, especially near Beachy Head, and it has even been seen in the centre of the town. Hybernated specimens were fairly common in Abbott's Wood in the spring, but I have seen none here. Of the var. *helice*, I have taken eight specimens, but in rather poor condition, owing to the fact that I discovered their haunt rather late. *C. hyale* has by no means been so plentiful, one specimen captured by my brother at Abbott's Wood being the only one seen.—T. BROMLEY, JUN.; Bineham, St. Leonard's Road, Eastbourne, Sept. 2.

About the middle of August, while staying at Brighton, I observed a great number of *C. edusa* on corn stubbles on the outskirts of the town. I took twelve males and four females, besides one fine specimen of the var. *helice* (pure white ground), in about one hour and a half. I think that it is a fact worthy of notice that all the *Colias* which I saw were flying inland away from the sea, a fact which makes it possible that their appearance was due to migration.—H. E. L. CHADWICK; Hadlow Castle, Tunbridge, Kent, Sept. 22, 1892.

I have been much interested reading accounts in your September number of the unusual abundance of *C. edusa* this year. When driving between Brighton and Lewes, the beginning of August, I noticed several fly across the road. I never saw the species here before, though I have travelled over the same ground at that particular season for some years past. I took the earliest opportunity of going in search of some, and found, I may say, hundreds in a wheat field near Stanmer. As the corn was being cut, it was easy to get at them, and I might have taken any number. They were principally males, for I only took one female, and was unable that day to obtain another. A day or two after I found females more plentiful, and the specimens all beautifully fresh, evidently having recently emerged. There was also a fair sprinkling of *C. hyale*. I remarked especially the unusual brilliancy of the male *Polyommatus adonis*. So many of the butterflies this year (above all the blues) I find attacked by some bright red insects; so thickly on the bodies of some, it seemed a wonder they lived, and appeared to fly as easily as without these unpleasant visitors.—(Mrs.) ARGENTINE BASHFORD; 36, Brunswick Square, Brighton, Sept. 16, 1892.

I was staying at Pulborough during the first week in August. *C. edusa* was on the wing, but not in any quantity, five being the largest number I saw in one day. I went there again, on the 18th August, to spend a few days; *C. edusa* was then very common, especially in meadows near the Arun, and on the railway embankments.—P. T. LATHY; Warren Road, Bexley Heath, Oct. 2, 1892.

Five specimens of *C. edusa* seen near Hastings between June 3rd and 6th.—E. R. CHAMBERS; 28, Southampton Buildings.

Several beautiful specimens of *C. edusa* var. *helice*, and one or two *C. hyale*, were among our captives. *C. edusa* was last seen here on Oct. 4th.—JOSEPH ANDERSON, jun.; Alve Villa, Chichester.

Wales.—I captured, on Sept. 14th, a fine male specimen of *C. edusa* in a lane running through a plantation above Pen-y-worlod, near Hay, Breconshire; also, on June 7th and Aug. 17th, I saw two specimens of *C. edusa* at Llanfairfechan, Carnarvonshire, on sunny banks near railway.—A. M. PATESHALL THOMAS; Llanthomas, Hay, Breconshire, Sept. 10.

A specimen of *C. edusa* was taken at Tenby in the spring.—HENRY A. HILL; Hampstead.

*C. edusa* was common at Usk, in Monmouthshire, at the end of August.—E. T. BISSHOPP; Ipswich.

*C. edusa* has been very plentiful about here since about the 12th of August, nearly two hundred having been caught by the members of the Penarth Entomological and Natural History Society; several of the var. *helice* having been met with. Of fifty *edusa* that I have caught, twenty-one are females, many in magnificent condition. Some of the females have a rich glossy appearance on the dark portions of the wings.—G. A. BIRKENHEAD; Penarth.

In addition to the localities already recorded where *C. edusa* has been

abundant this season, I am able to give Carmarthenshire and Pembroke-shire. On Aug. 22nd I noticed it all along the railway for more than twenty miles between Tenby and this county. *Vanessa atalanta* and *V. urtica* have also been very plentiful, and I have also seen several *V. cardui* and *V. io*. — T. B. JEFFERYS; Langharne, Carmarthenshire, Sept. 13, 1892.

A friend of mine, E. A. Sanders, caught a fine specimen of *C. hyale* on Sept. 2nd, in South Wales.—E. GORDON C. BROOKE.

I have just had a letter from an entomological friend, who tells me *C. edusa* has been abundant on the Welsh coast; also common inland, in N. Wales, Merionethshire.—J. ARKLE; 2, George St., Chester, Nov. 20, 1892.

*Warwickshire (North)*.—On Sept 3rd, 1892, I found a male specimen of *C. edusa* near Spade Mill Pool, Sutton Park. It was in good condition, and seemed to have just emerged from the pupa.—J. MOORE; 223, Great Russell Street, Birmingham.

*Wiltshire*.—I saw two *C. edusa* at Chippenham, and one at Box, Wilts, on Sept. 26th.—CHAS. BARTLETT; Branscombe, Redland Green, Bristol.

*C. edusa* has been abundant in the neighbourhood of Colne, N. Wilts, during the latter part of August, though females were somewhat scarce, the proportion of males to females being about seven to one. One female which I secured was unusually small, measuring only one inch and eleven-sixteenths from tip to tip.—(Rev.) J. E. TARBAT; Whitby Villa, Reading.

I was down home, in Wiltshire, about the middle of August last, and I found *C. edusa* fairly common. The place where they congregated chiefly was a large piece of waste ground in some allotment land, which had not been cultivated this year, and was entirely overgrown with thistles and other wild flowers. When the sun was shining it had a wonderfully bright appearance, for the place was literally alive with insects. *Vanessa io* and *V. urtica* simply swarmed. There were also *Lycæna icarus*, *Polyommatus phlæas* and *Plusia gamma* in fair numbers; and a good sprinkling of *Pyrameis cardui*, an insect of very uncertain habits—some years I have not seen a single specimen. I only saw two specimens of *edusa* var. *helice*, neither of which I was able to capture. All insects were in splendid condition.—(Rev.) T. B. EDDRUP; Newchurch-in-Rossendale, Manchester.

*Worcestershire*.—Since coming here (Tenbury), on the borders of Worcestershire and Shropshire, I have seen a few *C. edusa*.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 3, 1892.

*Yorkshire*.—On May 29th last I captured a fine female specimen of *C. edusa* in Edlington Wood, near Doncaster, Yorks. It was flying down a clearing in the wood, and its condition was as if just emerged.—E. G. POTTER; York.

Several specimens of *C. edusa* were taken last month in the neighbourhood of York, but, so far as I am aware, neither the var. *helice* nor *C. hyale* have put in an appearance. *Vanessa atalanta* has been very common, and *V. cardui* fairly so.—WILLIAM HEWETT; 12, Howard Street, York, Oct. 21, 1892.

My boy, Stanley Harris, brought a specimen of *C. edusa* in one day from the fields by the Ure, over against Hawes, in Upper Wensley Dale. As an old collector, well acquainted with the North Riding, I believe this wild and bleak locality for *C. edusa* is quite new. We took it at Richmond in 1875 (I think it was), but that is further down dale, and quite a different climate.—C. ALEX. HARRIS; The Hermitage, Worcester Park, Oct. 24.

*Ireland*.—I wish to record the appearance here, on Aug. 28th, of a



single specimen of *C. edusa*, an insect I have never seen here before. Mr. Birchell gives "east coast" among other localities, so that the occurrence so far north may not be unprecedented. *Vanessa cardui* has been common this year; previously not more than one or two seen in a season. *V. atalanta*—usually not abundant—in great numbers this year. *Plusia gamma* not more frequent than usual, I think. A single specimen of *Sphinx convolvuli* may also be worth noticing. Since writing the above, a second specimen of *C. edusa* was captured here on Sept. 22nd. These are the only two I have seen or heard of about here—M. FITZGIBBON; Howth, Co. Dublin, Ireland.

*Scotland*.—On Aug. 24th last I was on a hill called Whistlefield, a few hundred feet above Loch Long, Dumbartonshire, when, to my surprise, I saw *C. edusa*, a single specimen only, flying over the heather. It was a male, in good condition.—GEOFFREY HUGHES; Woolston Vicarage, Southampton, Sept. 22, 1892.

I saw a male specimen of *C. edusa* which was taken at Forgendenny, near Perth, on Aug. 25th; captured by Mr. Hendry, Caledonian Road, and is now in the possession of his brother-in-law.—R. LAWSON; 10, High Street, Perth, N.B.

My brother-in-law informs me that he had seen an example of *C. edusa* on a mountain in Scotland near Row, not very far from Glasgow. The date was either the 19th or 20th of August.—F. C. WOODFORDE; Market Drayton.

Whilst staying at New Abbey (Kirkcudbrightshire), in September, I took a perfectly fresh male, and saw one other, both on the 23rd.—L. S. BRADY; Mowbray Villas, Sunderland, Oct. 18, 1892.

*Channel Islands*.—*C. edusa* has been literally swarming in Jersey this year, as likewise in the other Channel Islands, I learn from communications. I have taken *helice* and every other variety of this interesting insect.—W. J. KAYE; Dudley House, Bagot, Jersey, Sept. 16.

## NOTES FROM THE NEW FOREST AND SWANAGE.

By E. G. ALDERSON.

On July 22nd I set out, with Mr. E. B. Charles, for the New Forest. We had previously had an indifferent week's sport in Sherwood, and were fully resolved to make up for its shortcomings in a more productive locality. From the first we were favoured with glorious weather, hot enough to satisfy the most inveterate entomological grumblers. The brilliant sunshine by day was invariably followed by those close dark nights in which *Noctuæ* most thickly do congregate upon sugar; and altogether our experiences were in pleasant contrast to those of our week in the midlands.

There was a brave show of butterflies. Of course *Gonepteryx rhamni* and the common "whites" and "Satyrs" were in plenty, but of the latter *Satyrus semele* seemed hardly so common as in former seasons. *Argynnis paphia* was a nuisance, and *A. adippe*

was more abundant than I have ever seen it before in the Forest. We took a few fine *A. aglaia*. This beautiful species, however, was far rarer than its congeners, and was altogether outnumbered by *A. paphia* var. *valesina*. It was evidently a *valesina* year; everywhere one was sure to see its dusky form sailing down the ridings. *Melanargia galatea* was still abundant in one spot. On our first day in the Forest *Colias edusa* was sighted, and I had the pleasure of taking it for the first time since 1877; a capture which brought back many pleasant memories of that marvellous season when "clouded yellows" were as common as blackberries, even in Nottinghamshire. *Limenitis sibylla* was abundant, but difficult to get in good condition. Of the Vanessidæ, *Vanessa io*, *V. atalanta*, and *V. urticae* were of course common; and both *V. cardui* and *V. polychloros* were in unusual numbers. Of the latter species we got some splendid examples; one tree in particular, from which sap was exuding, being a safe draw.

This same tree was also tenanted by an old male *Apatura iris*, whose downfall I eventually compassed as he sallied forth to do battle with a venturesome *L. sibylla*, which had dared to invade his quarters. Although we saw scores of "emperors," this was our solitary capture. They were out in force; on our first day we saw no fewer than fourteen, all hopelessly out of reach, except one, which Mr. Charles unfortunately missed. Frequently in our walks abroad we saw three or four at once, battling together high in air, but apparently they were quite aware of the presence of danger below, and never gave us a chance.

The oaks in several places were alive with *Thecla quercus*, and we employed one dull morning very profitably in beating them out. *Lycæna ægon*, *L. alexis*, and *L. agestis* were common; and among the Hesperidæ, *Hesperia thaumas*, *H. sylvanus*, and *Nisoniades tages* were taken in greater or less abundance.

My companion had never taken *H. actæon*, so we went down to Swanage on the 26th July, in order to look it up. As the Rev. W. Claxton, whose article on the species, in the 'Entomologist' for October, I have read with much interest, expresses a fear for the future of *actæon*, I am glad to be able to assure him that we found this beautiful "skipper" still abundant at Swanage, in company with *Melanargia galatea*, *Colias edusa*, *Eubolia bipunctaria*, *Zygæna filipendulæ*, and *Macroglossa stellatarum*. By way of parenthesis, I may remark that revisiting Swanage on August 5th, I found *H. actæon* still commoner, and *C. edusa* in wonderful profusion, with a fair sprinkling of var. *helice*.

Sugaring was good business in the Forest, the nights being uniformly favourable. From the first *Catocala promissa* came on freely, and on July 30th was joined by *C. sponsa*. Several *Triphæna fimbria* were taken, and one *T. interjecta*. *Gonophora derasa*, *Thyatira batis*, and *Aplecta nebulosa* were common; while, of course, *Amphipyra pyramidea*, *Noctua brunnea*, *Cosmia trape-*

*zina*, *Euplexia lucipara*, and *Xylophasia polyodon* came in countless myriads every night, with an occasional *Mania maura* or *Leucania lithargyria*; *Boarmia repandata* var. *conversaria* also turned up twice at the sugar.

Of miscellaneous captures we had a fair show. Once or twice *Liparis monacha* and *Calligenia miniata* came down the riding where we had sugared, and were duly secured. We took one *Geometra papilionaria*, several *Pseudoterpna cytisaria*, a lot of pretty forms of *Ennomos erosaria*, a pair each of *Selenia illustraria* and *Tephrosia crepuscularia*; *Aspilates citraria* (at Swanage), *Selidosema plumaria*, *Phytometra ænea*, *Anarta myrtilli*; two *Bombyx quercus*, one a fine female, which I netted, after a hot chase, close to Lyndhurst Road station; and one *Platypteryx unguicula*.

After our bad luck in Sherwood, we were well satisfied with our spoil, our want of success with *A. iris* being our only cause for regret. The solitary capture recorded above constituted our only claim to the title of regicides. A very disreputable old male he was, too; still he was my first emperor; and seeing he was likely to die of extreme old age, I helped him on the road to dissolution. But if this species is as common next season, may I be there to see.

Worksop.

## NOTES FROM THE NORTH-WEST COUNTIES.

By J. ARKLE.

A YEAR ago, in a contemporary, I read of an entomologist who went in early July to Penmaenmaur, and who had the good fortune to take not only *Agrotis ashworthii*, but *Acidalia contiguaria*. Both species, if I recollect rightly, were taken off the rocks. To those unacquainted with the district, I may say that Penmaenmaur, Llanfairfechan, and Aber are on the line of rail which skirts the coast away to Holyhead. They are in Caernarvonshire, just round the Great Orme's Head, and they command a fine view of Puffin Island and Anglesey, which are just opposite, and of the entrance to the Menai Strait. The three places will be about two miles and a half from each other.

Early in July of this year I went to visit an old friend from London, who was staying at Llanfairfechan for a few weeks. Speaking entomologically, the net was out of the question, for, independent of other considerations, the weather was dull and threatening, and the temperature not quite up to one's expectation for July. The conditions were, however, very favourable for rock-hunting, and every effort was consequently made to come across the two species of Lepidoptera referred to.

The immediate features of the inland are, first, a belt of trees



and brushwood rising a few yards away from the shore; then the rocky heights; and, lastly, the mountain tops, many of which rise 3000 feet. Farther away, and nearer the Strait, is Carneydd Llewellyn, claimed by the guide-book, according to the latest survey, to be 9 feet higher than Snowdon. But Snowdon has upon its summit an artificial cairn 15 feet high, and so it tops its ambitious rival by just 6 feet. Search we did, from the sea-level to cloudland, but we saw neither *A. ashworthii* nor *A. contiguaria*. In the belt of vegetation, and in quarries and rocky places, *A. incanaria* was a common insect. It is fond of resting by day on the growths of ivy which climb up the rock-faces, and its neat little grey wings spread out like a fan upon a bright green leaf make a pretty picture. But if good insects are not to be had, the holiday-maker can find a world of enjoyment in the grand scenery of this delightful part of "Wild Wales." There is the Fairy Glen, with its waterfall, near Penmaenmaur. It lies hidden in a bosky wood just past the Dwygyfylchi Hotel, which hostelry the reader may glibly quote to the intending visitor as a place where every care is bestowed on man and beast. I took a fine specimen of *Aplecta nebulosa* off the little rustic wooden bridge just below the fall. It was quite as light coloured as the specimens I take at Tan-y-Bwlch, in Merionethshire. Whether at Penmaenmaur, or Llanfairfechan, or Aber, the only Acidaliidæ I met with were *A. incanaria* (common) and *A. aversata*. At Llanfairfechan *Nudaria mundana* was a common moth; the other species were such as are generally distributed. On the bare mountain tops there seemed to be a total absence of not only insect, but animal life. Even vegetation, with the exception of the short mountain-grass, almost as close and short as the pile of velvet, was reduced to the smallest limits. The few types included the beautiful stag's-horn moss, creeping among the short grass; and by the mountain-springs, where the water is cold and pure, grew rare and curious forms of blossoming water-plants. Now and then a cloud enveloped us, and, passing away with the breeze, left a tiny sparkling drop on every grass-blade. It is best to wait till the cloud has passed, for there may be an ugly scaur near, at the bottom of which lies a silent, sullen, and desolate lake.

For scenery of its kind, nothing can surpass a walk up the woody Aber Glen to the celebrated waterfall. Here the parsley fern grows luxuriantly. Skipping about on the short herbage I found numerous specimens of *Crambus culmellus*, all of which were very much smaller than the type. In short, the whole district, if properly worked and in favourable weather, would no doubt be very productive to the entomologist; but as my time was up, and the skies showed no signs of clearing, I left this beautiful neighbourhood on the 19th, and with almost empty boxes. It was a memorable day of cold, and wind, and heavy rain. Of butterflies I had seen none, their only evidence

being an empty pupa-case of *Vanessa urticæ* hanging from a stone wall.

On the 23rd I started from Chester to Lancaster. A railway collision, which happened on the way, nearly prevented this chronicle, but I turned up amongst the lucky. On reaching my destination I found a letter from my friend Mr. Murray, of Carnforth, arranging a trip to the Witherslack Mosses, which lie about six miles to the south-east of Lake Windermere in Westmoreland. The weather had cleared up, and three of us did our best in the tropical heat among the brilliant insects, which literally swarmed in that sheltered corner of the Mosses, just by the Summerhill Farm, *alias* "Far-Away." Our route was as follows:—Lancaster to Arnside *via* Carnforth, then a walk across the Kent estuary along the railway bridge, then along the river embankment to the right, and so on to the 'Derby Arms' Inn, Witherslack, and "Far-Away." All along the embankment *V. urticæ*, *Epinephele ianira*, *Lycæna icarus* (*alexis*), and *Eubolia limitata* (*mensuraria*) were abundant; but of the "meadow-browns" I saw no "bleached" specimens. A fine dragonfly, one of the *Æschnidæ*, rose from the ditch below, but it gave me no chance of further identification. I saw another specimen during the day, but failed to capture it. On the flat, rocky spot covered with St. John's wort, where we turned off the embankment to the left and so on through the fields to the 'Derby Arms,' we found any number of *Tortrix rufana*. They were fresh from the chrysalis, and in many cases almost red in colour. Other captures here were *Gnophos obscuraria* (*obscurata*), *Anaitis plagiata*, *C. falsellus*, *C. inquinatellus*, and *C. selasellus*. One Fritillary was seen on the way to the inn, probably *Argynnis aglaia*. On the borders of the Mosses foxgloves grew freely. From the flowers of isolated plants I got a large number of nearly full-fed larvæ of *Eupithecia pulchellata*. On the rocky hillside we netted, among the ferns, a few specimens of *Tanagra atrata* (*chærophyllata*). But it was on the Moss itself, in the corner aforesaid, where cotton-grass, heath, and bog-myrtle are about equally mixed, that the winged assembly was most numerous and brilliant. There were *Nemeophila russula*, *N. plantaginis*, *Anarta myrtilli*, *Hyria muricata* (*auroraria*), *Acidalia fumata*, *Carsia paludata* var. *imbutata*, *Phycis fusca* (*carbonariella*), and *Mixodia schulziana*, all fresh from the chrysalis, with the exception of *A. fumata*, and in abundance, if we except *P. fusca*. Females of *N. russula* were as abundant as the males. A few late specimens of *Cænonympha typhon* (*davus*) were on the wing, and many were in capital condition. Attendant nuisances were *Ematurga atomaria* and *C. margaritellus*. A couple of hours here under the burning sun and intense heat compelled us to beat a retreat on the 'Derby Arms,' where, our flasks being empty,

we were glad to restore the equilibrium in shandygaff. By and bye, under the kind direction of Mr. Murray, larvæ of *E. constrictata* were taken from flowers of wild thyme, close by the roadside at the bottom of the hill, a hundred yards or so from the inn. Here, also, I netted a few fine specimens of *L. astrarche* (*agestis*) var. *salmacis*. Wherever we came across nettles in the neighbourhood we found larvæ of *V. io*. The day closed with a call, on our way home, at Mr. Murray's, Carnforth, where my companion and I enjoyed a look at our friend's fine collection of Lepidoptera, stuffed birds, and eggs. In his garden stands a breeding-house for Lepidoptera, whilst immediately around are growths of sallows and other shrubs, upon which were feeding unconfined larvæ of *Saturnia pavonia* (*carpini*), *Dicranura vinula*, &c.

(To be concluded.)

### ENTOMOLOGICAL NOTES, CAPTURES, &c.

THE AUTUMN FORM OF *VANESSA C-ALBUM* BRED FROM SPRING LARVÆ.—Cases of the one brood of a seasonal dimorphic species assuming the form of the other brood, *under artificial conditions*, are of by no means uncommon occurrence; but obviously similar cases occurring under natural conditions are not so easily traceable, and the following—which took place amidst surroundings so nearly approaching those that would affect an insect in a wild state—is, on that account, perhaps worth putting on record. *Vanessa c-album* affords a good example of such a species, the two emergences being easily separable, the chief point of difference being in the coloration of the under side, which in the earlier brood is of a pale ochreous tint, while that of the later brood is dark greyish brown. In June last I received from my valued correspondent Mrs. Hutchinson, of Leominster, six full-fed larvæ of this species, which at once pupated among the currant-leaves with which they had been supplied for food, and were placed in a large open cage, fully exposed to the weather, except for the protection afforded by a board placed over the top of it to keep off the worst of the rain. Four imagines, of the usual summer form, emerged between the 2nd and 7th of July; the temperature then fell considerably below the average for the time of year, and no more emergences took place until the 15th, when the fifth butterfly attempted to leave the pupa, but failed to clear itself of the shell or to expand its wings. On the 17th the mean temperature was just 20° below the average, with rainy weather, and there was little improvement in this respect until the 22nd, and on the 23rd the last imago appeared, a fully developed female, but distinctly of the autumn form.—ROBT. ADKIN; Lewisham, Nov., 1892.

*CHEROCAMPA CELERIO* IN SUSSEX.—On Friday last I received a fine female specimen of *Cherocampa celerio*, taken at Brighton, last month, at rest on a bathing-machine, by the custodian of the towels, &c. The insect is on an enormous common pin, which detracts from its otherwise splendid



condition. It spans three inches and a quarter across the wings.—A. COWPER FIELD; 81, Wiltshire Road, Brixton, S.W., Nov. 9, 1892.

SPHINX CONVULVULI IN SUSSEX.—A specimen of *S. convulvuli* was captured here at the end of last September.—W. M. CHRISTY; Watergate.

AGROTIS SAUCIA AND DASYCAMPA RUBIGINEA.—I am able to record the appearance of *Agrotis saucia* here in some numbers. Up to the middle of October, when I had to leave off trying, I took sixteen at sugar, as follows:—Sept. 20th, one; 24th, one; 27th, three; 30th, two; Oct. 5th, two; 6th, six; 10th, one. These are all the nights, except three, that I could go out, so that I think it must have been fairly plentiful. Among the captures are four very light brown, without a trace of reddish. On Oct. 7th I had the pleasure of taking a single *Dasycampa rubiginea*.—(Rev.) W. CLAXTON; Hartley Wintney, Winchfield.

HELIOTHIS ARMIGERA AT CHICHESTER.—Somewhat singularly, simultaneously with the appearance of Mr. Arkle's interesting article on *Heliothis armigera* in the September number of the 'Entomologist,' I was engaged in identifying a moth, taken here at light on the 28th of that month, and which I determined to be that species. Wishing to certify myself I forwarded it to Mr. Tugwell for verification. He very kindly did this, and wrote that there was no doubt as to the moth being *H. armigera*. It is unfortunately in poor condition, as Mr. Tugwell informs me most of the captured specimens are.—JOSEPH ANDERSON, Jun.; Chichester.

ENNOMOS AUTUMNARIA (ALNIARIA), &c., IN KENT.—While sugaring in Kent, in the middle of September, this year, I took a female specimen of *Ennomos alniaria* newly emerged. I kept it alive on the chance that I might find a male, which I did on the following day. Both specimens were cripples, the female having one of the under wings spoiled and the male all four. I placed both together, and kept them alive for a week, but failed to get any ova. The male was much smaller than the female; the markings and colour were alike, the only difference I noticed being the feathered antennæ of the male. The male managed to escape; the female I have kept for reference if required. Near the same place I saw a few wings of the same species, and I believe specimens of *E. alniaria* could be obtained in numbers if properly searched for. In the same place I also took *Vanessa cardui*; *V. atalanta*, common; *Colias edusa* and *C. hyale*, plentiful, but rather rubbed; one female *Gonepteryx rhamni*, perfect, the only one I saw; *V. io*, common, but in bad condition; five specimens of *Macroglossa stellatarum*, flying over larkspur. At sugar I took *Cosmia diffinis* (one), *Agrotis saucia* (plentiful), and several common Noctuæ. In the month of July, this year, in Leytonstone, I took *Apamea ophiogramma*, flying over the flowers in my garden; at the end of August I took a single specimen of *Thyatira batis*, in perfect condition, just as it left the sugar.—JAS. GARROW; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, E., Oct. 9, 1892.

LARVA OF POLYOMMATUS ALCIPHON VAR. GORDIUS.—The supposed "Larva of *Polyommatus alciphron* v. *gordius*, Stgr.," described by me (Entom. 288), I now find to be nothing but a fine *P. phlæas*, female, which emerged, on Oct. 30th last, in my puparium. *P. gordius* is certainly very abundant at St. Martin-Vésubie during the season; in fact, far more so than the well-known *phlæas*, whence, I suppose, my mistake. The speci-

men of this latter, now before me, has two or three extra spots, and appears rather larger than most specimens I have seen.—F. BROMILOW; Avalon, St. Maurice, Nice, S. France.

ARE JERSEY INSECTS BRITISH?—*Apropos* of Mr. W. J. Kaye's letter (Entom. 202) when making the tour of the Channel Isles, in 1860, in the company of my father, I clearly recall a difference of opinion between him and the late Dr. J. S. Bowerbank, who was our fellow-traveller in Guernsey and Sark, and in quest of Spongiadæ, especially in the Gouliot caves of the last-named island; Dr. Bowerbank maintaining that the Channel Island Fauna should be regarded as British, and my father holding the contrary view, and considering that Malta and Gibraltar had an equal claim. It is certain that some of our rarest British Rhopalocera are, or at any rate were, as common in Jersey as on the Continent; for example, I captured six specimens of *Argynnis latona* and three of *Pieris daphidice*, certainly, in St. Ouen's Bay. The prevalence of *Lacerta viridis*, unknown in Britain, but widely distributed on the Continent, and of many continental species of plants, lead me to the conclusion that the Flora and Fauna of the Channel Isles, or of Jersey at all events, should be classed with the Continental rather than with those of Britain.—F. A. WALKER; Dun Mallard, Cricklewood, N.W.

N.B.—Mr. Piquet pointed out to me several local plants in the vicinity of St. Heliers, and sent me afterwards many larvæ of *Deilephila euphorbiæ*. All unfortunately died, however, in the autumn of 1860, before reaching the pupa stage, and Mr. Piquet wrote shortly after to say that he had likewise lost his own batch, so that the failure, or epidemic, that season would seem to have been general.—F. A. W.

MALE *versus* FEMALE MOTHS AT LIGHT.—With reference to the interesting note of Mr. Anderson, jun. (Entom. 290), I beg to say I have found males to far outnumber females in my captures at gas-lamps. The following are illustrations from my last six years' experience;—*Pœcilocampa populi*: about a score of males taken every year; two females in the six years. *Neuronia popularis*: about a score of males each season; one female in the six years. *Asteroscopus sphinx (cassinea)*: about a dozen males each season, but never a female I regret to say. *Eugonia alniaria (tiliaria)*: males about a score every year; two females, all told. *Himera pennaria*: about a score of males captured yearly; no females in the six years. Generally, I believe, males fly more than females; and I think this is only natural, in spite of the usual greater wing development in the females,—always excepting the apterous species. My experience shows this rule of flight to be equally applicable to butterflies. Take, for example, the testimony of the *Colias edusa* pages in the November 'Entomologist.' It may be urged, possibly a greater number of males are actually born. I can only say a long breeding experience shows me that the sexes are pretty equal; in fact, I have noticed the females sometimes show a numerical superiority.—J. ARKLE; Chester.

ARCTIA CAIA: SECOND BROOD OF LARVÆ.—“July 21, 1892. Bumper's Lane, near Chester. Took a larva of *A. caia* in its second or third skin. Found two dead ones, evidently of the same brood, apparently glued to grass stems, as if for the purpose of moulting. The living larva died July 27th.” The caterpillars referred to in this extract from my note-book

would be the progeny of early moths of the same season. Had they lived they would have produced, in the autumn, a second brood of the perfect insect, —a matter which, I have reason to believe, is not of very rare occurrence. —J. ARKLE; Chester. [They would more likely have produced parasites.]

MIGRATION OF *PIERIS BRASSICÆ*, AT HARWICH.—We have had an immense immigration of *Pieris brassicæ* from the Continent. On Thursday, Aug. 11th, and for several days after, thousands were to be seen coming over the sea; large numbers were drowned. The lobster-catchers, who fish about five or six miles from the shore, told me that you could not look anywhere over the sea without seeing white butterflies making for the shore. The larvæ have swarmed in countless numbers; no one in this neighbourhood ever remembers a similar visitation before. Ichneumons have destroyed the greater part of the larvæ; out of two hundred that I counted at the Phoenix Hotel, at Dovercourt, I found only thirty-seven pupæ, the other 163 having been destroyed by the ichneumon flies.—F. KERRY; Harwich, Nov. 14, 1892.

HOMALOPLIA RURICOLA.—I have pleasure in recording the occurrence of this rare lamellicorn at Streatley. On Aug. 26th I picked up a single example on a grassy hill-side, and also one specimen of *Chrysomela hæmoptera*.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

NOTODONTA DROMEDARIUS.—I beat a larva of this species from hazel on September 9th. Is not this an unusual food-plant?—GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham.

NOTES ON LEPIDOPTERA IN SHROPSHIRE.—*Pieris napi* has simply swarmed about here, while *P. brassicæ* and *P. rapæ* have been rather uncommon. *Argynnis paphia* has been very plentiful up to August 28th, when I saw about a dozen; while next day there was not one to be seen, nor has there been one seen since. *Vanessa io*, *V. atalanta*, and *V. c-album* have been and still are very numerous, *V. atalanta* in particular. Another very common butterfly is *Pararge megæra*; while, on the other hand, some of the commonest species seen were very scarce here, such as *V. urtica*, of which I have only seen 1 specimen; *Epinephele ianira*, 3 specimens; *E. tithonus*, 2; *E. hyperanthus*, 2; *Cænonympha pamphilus*, 2; *Polyommatus phleas*, 2; and *Lycæna icarus*, 1. I have only seen 1 specimen of *V. cardui*, which I captured on August 28th, and 1 *Lycæna arion* on August 30th on a turnpike road. The above were seen by me in this neighbourhood since the 1st of August, and I have been out nearly every fine day from that date to the end of September. I may add that an unusual number of larvæ of *Arctia caia* were seen crawling along the paths and roads.—E. H. BLACKMORE; 13, Bull Ring, Ludlow, Salop.

NOTES FROM THE KENTISH COAST.—I was staying with a friend, in the vicinity of Folkestone, during August, and found the season very good. *Colias edusa* was fairly common, and we secured a good series, amongst them being two var. *helice*. We never even saw *C. hyale*; but *Vanessa cardui* and *V. atalanta* swarmed everywhere. The above locality seems to be very rich in Sphinges. I took two larvæ of *Acherontia atropos* on a small patch of potatoes close to the sea, on Aug. 15th; one of them, stung by an ichneumon, died, but the other I succeeded in rearing, and obtained from the pupa, on Oct. 14th, an imago measuring four inches and seven-



eighths across. We also took twelve larvæ of *Chærocampa elpenor* from one ditch, while the larvæ of *Smerinthus ocellatus* and *Sphinx ligustri* we found in abundance. During the first week in August we also captured about twelve imagoes of *Macroglossa stellatarum*, in poor condition.—R. H. BYRNE; 47, St. John's Park, N.

LEPIDOPTERA IN SOUTH WALES, ETC. — The following Lepidoptera appeared unusually abundant during my stay in South Wales, chiefly in Carmarthenshire, from the end of June until the end of September:—*Pieris rapæ*, *P. napi*, *Vanessa atalanta*, *V. urticæ*, *V. cardui*, *Epinephele tithonus*, *Polyommatus phlæas*, *Hesperia thauwas* (linea). *Colias edusa* I have separately reported; it might be seen, during August and September, by the coast, river-side, o'er hill and dale. I may add that I saw the last specimen in Gloucestershire, on the Cotswolds, on Oct. 11th. *Macroglossa stellatarum* was also more abundant, in Wales, and *Nomophila noctuella* exceptionally so. Of injurious Lepidoptera, *Eupithecia rectangularata*, *Abraaxas grossulariata*, and *Pionea forficalis* and its larvæ, were over-abundant. The gooseberry and currant bushes in one locality suffered excessively from the larvæ of the sawfly, *Nematus grossulariæ*.—T. B. JEFFERYS; Clevedon, Nov. 2, 1892.

NOTES ON LEPIDOPTERA AT CHICHESTER.—My captures in May were *Hemerophila abruptaria*, *Ciliæ glaucata* (spinula), *Emmelesia albulata*, and at light *Dianthæcia carpophaga*. At the end of the month hibernated *Vanessa cardui*, and *Colias edusa* were very numerous. In June I took *Acronycta aceris*, *Hepialus humuli*, the females of the latter varying much in size (some being scarcely larger than the males, others twice the size) and the markings in some specimens were very faint and indistinct, but others very rosy and pronounced. In the garden *Sesia tipuliformis*, flying round or settled on the leaves of currant and raspberry bushes. In July, *Melanippe procellata* and *Macroglossa stellatarum*. On the 29th of this month I first saw the new brood of *Colias edusa*. Looking over my captures of this butterfly I notice one male with borders quite black, the wing-rays also being streaked with black. It is quite different from the type. The band in some, on the contrary, is thickly dusted with yellow scales. In September, sugar attracted *Catocala nupta* (a few), not in such good condition as in former years, and, after several years' disappearance, *Agrotis saucia*, varying considerably; *Agrotis suffusa*, *Noctua c-nigrum*, *Caradrina taraxaci* (blanda), *Hydræcia micacea* (also at light). In addition to the *Eugonia* (*Ennomos*) *autumnaria* recorded (Entom. 290), my brother took a male at light on Sept. 26th.—JOSEPH ANDERSON, Jun.; Alve Villa, Chichester.

CAPTURES AT FOLKESTONE.—The entomological section of the Natural History Society of the Currie Schools have taken, during last term and the latter half of September, 167 species of Lepidoptera in the district. The following is a small selection:—Rhopalocera: *Colias edusa*, *Thecla rubi*, *Lycana argiolus*, and *Nemeobius lucina*. Heterocera: *Deiopeia pulchella* and *Plusia moneta*; also *Sphinx ligustri*, *Chærocampa porcellus*, *Macroglossa stellatarum*, *Cossus ligniperda*, *Chelonia plantaginis*, *Dicranura bifida*, *Notodonta dictæa*, *Angerona prunaria*, *Geometra papilionaria*, *Iodis vernaria*, *I. lactearia*, *Phibalapteryx tersata*, *Acronycta ligustri*, *Tapinostola* (*Chortodes*) *bondii*, *Xylophasia sublustris*, *Caradrina alsines*, *Tryphæna fimbria*, *Xanthia cerago*, *X. silago*, and *Cosmia pyralina*.—E. G. FELLOWS (Sec.)

LEPIDOPTERA IN THE SOUTH OF FRANCE. — Although the season is now practically over, here, there are still a few species to record. Yesterday I saw several *Colias edusa*, a *Vanessa cardui*, *Pararge ægeria* v. *egerides* (Stgr.), two, and one *Macroglossa stellatarum*. This latter hibernates in dwelling-houses, and may often be met with in disused clothing, &c., during the winter months. I also took *Lycana bætica* (Linn.), a worn male, and an example of *L. telicanus* (Lang.), female, likewise in a dilapidated condition: I am informed that two specimens of the former insect were observed in the neighbourhood on the 10th ult.; it is certainly rare. The species seems chiefly to frequent gardens. I remember I took a female, very fresh, on October 8th, just five years ago. *L. telicanus* is usually fairly common on waste ground. Is it not probable that the species feeds on other plants besides *Lythrum salicaria* and *Calluna*, as neither of these occur in any abundance in the district? I am surprised not to have met with *Charaxes jasius* (Linn.), which is to be seen at this date in most years, though I have not yet succeeded in capturing it! It has a high, soaring flight, and is fond of settling on the figs which are laid out to dry in the sun.—F. BROMILOW; Nice, France, Oct. 13, 1892.

ERRATA.—Pp. 267, 269, for *Antomeris* read *Automeris* throughout. P. 268, l. 17, for *Loepa swalica* read *Loepa sivalica*. P. 269, l. 14 from bottom, for *Saturnioidæ* read *Saturniidae*. P. 269, l. 12 from bottom, for *eupterote* read *Eupterote*.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—November 2nd, 1892. — Frederick DuCane Godman, Esq., F.R.S., President, in the chair. The President announced that the Society had acquired a new oxy-hydrogen lantern, and that the cost of it had been generously defrayed by Mr. H. J. Elwes, Prof. Meldola, Mr. R. McLachlan, and Mr. E. B. Poulton. Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year. Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar* var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England. Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphæna promuba*, taken at Swansea by Mr. W. Holland. Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth. Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair, one of which was taken in the New Forest, and the other on the Continent. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes. The Rev. J. Seymour St. John exhibited a monstrosity of



*Abraças grossulariata*, and a specimen of *Tæniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens. Mr. E. B. Poulton exhibited two series of imagos of *Gnophos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light. Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than that of those which had spun up on the leaves, with numerous dark spots and lines on them. Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the specimens of the first brood was remarkable in having the under side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine. Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus* bred from ova laid by a female taken in the New Forest in July last. Mr. F. D. Godman exhibited a specimen of *Amphonyx medon*, Cr., received from Jalapa, Mexico, having a pouch-like excrescence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes, and Mr. Poulton commented on it. Mr. C. J. Gahan communicated a paper entitled "Additions to the Longicornia of Mexico and Central America, with notes on some previously recorded species." Mr. W. L. Distant communicated a paper entitled "Contributions to a knowledge of the Homopterous family Fulgoridæ." Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern) entitled "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon." The author stated that the imago produced, probably from the mouth, a solution of caustic potash for the purpose of softening the cocoon. The solution was obtained for analysis by causing the moths to perforate artificial cocoons made of filter-paper. Prof. Meldola said that the larva of *D. vinula* secretes strong formic acid, and Mr. Latter had now shown that the imago secretes potassium-hydroxide, a strong alkali. He said he had long been familiar with the fact that the secretion from the imago of *D. vinula* was alkaline to test-paper, but he had never investigated its composition; and he also stated that the fact that any animal secreted a strong caustic alkali was a new one. Mr. Merrifield, Mr. Hanbury, Mr. Gahan, Mr. Poulton, and Prof. Meldola continued the discussion. Mr. H. J. Elwes and Mr. J. Edwards read a paper, also illustrated by the oxy-hydrogen lantern, entitled "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he attached great importance to the genitalia as structural characters in determining species, and he believed that he



could name almost any species of European Trichoptera simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of Hesperidæ, with the view of considering their value in distinguishing species, but at present he had not matured his observations. Mr. Jacoby, Mr. Bethune-Baker, Colonel Swinhoe, Mr. Lewis, Dr. Sharp, Mr. Hampson, and Mr. Champion continued the discussion. Mr. S. H. Scudder communicated a paper entitled "New light on the formation of the abdominal pouch in *Parnassius*." Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. It had been considered doubtful whether the fluid which formed this pouch was secreted by the female or the male, but he always thought that it was secreted by the latter, as after pairing the male frequently died from exhaustion. He was glad to find that Mr. Scudder had now proved this supposition to be correct. Mr. Jenner Weir remarked that a similar abdominal pouch was to be found in the genus *Acraea*; and Mr. Hampson referred to specimens, in Mr. Leech's collection, of a male of one species of *Parnassius* taken in copulâ with a female of another species, in which the pouch peculiar to the species to which the female belonged had been formed. and, not fitting the claspers of the male, had come away from the female on the specimens being separated, and remained attached to the male.—H. GOSS & W. W. FOWLER, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 27th, 1892.—C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Hugh Main, of East Greenwich, was elected a member. Mr. Bristowe exhibited *Zygæna trifolii*, Esp., intermediate between the normal form and the yellow variety; and a variety of *Argynnis paphia*, L., in which the spots had coalesced and formed streaks. Mr. C. Fenn, *Tortrix rosana*, L., from Aberdeen and Eltham, and remarked that there was some doubt as to the Aberdeen specimens being referable to this species, and Mr. Barrett said he considered them to be *T. rosana*. Mr. R. Adkin showed *Odonestis potatoaria*, L., bred from larvæ collected in Sussex, the series showing considerable variation; he also called attention to the wings of some of the females being much scalloped, but still retaining complete fringes. Some observations were made by members upon the probable causes of this. Mr. Barrett exhibited two specimens of *Nonagria concolor*, Gn., one taken in the Yaxley Fen district thirty or forty years ago, and the other recently captured in a locality in the Midland Fen district, and forwarded by Dr. F. D. Wheeler for comparison; also, specimens of *N. helmanni*, Evers., *N. fulva*, Hb., *N. bondii*, Knaggs, and *Miana arcuosa*, Haw., which approached closely to *N. concolor* in colour. Mr. Fenn, referring to the *Eupithecia* from Paisley, and which Mr. Tugwell at a previous meeting referred to *E. castigata*, remarked that it had now been ascertained that the larva was a pine-feeder, and therefore it could not be *E. castigata*, Mr. Tugwell said he understood that the specimens were found on pine trunks, but that the larvæ fed on heather, and he had this year reared the species on heather. Mr. Carpenter said the specimen of *Argynnis*

*paphia* recently exhibited by him was a female, and not a male example as recorded.

November 10th, 1892.—The President in the chair. Mr. R. South exhibited portions of two broods of *Coremia ferrugata*, Clerck, and of two broods of *C. unidentaria*, Haw., and read notes thereon, pointing out the differences between the two forms of the first-named species, and the differences between them and the last-named species and that he had been led to the conclusion that although it was probably correct to keep *unidentaria* specifically distinct from *ferrugata*, it might not be equally correct to place together the two forms exhibited by him as *ferrugata*; and he asked the members to endeavour to work out the life-history of any varieties of this species of which they might obtain ova. Mr. Goldthwait mentioned having recently reared imagines from a captured *unidentaria* which all followed the female form. Mr. Fenn said he had always found both species breed very constant, and he had never bred intermediate forms. Mr. W. de V. Kane exhibited *Stauropus fagi*, L., taken in Ireland; a damaged example of *Notodonta bicolor*, Hb., taken at a new locality; a photograph of the pupa of *Dianthæcia barrettii*, Dbl., and said he felt certain, from the structure of the pupa, that it belonged to the *Dianthæcia*. Among other things in Mr. Kane's box were some curious forms of *Fidonia atomaria*, Tr.; *Bryophila muralis*, Forst., varying to very black forms; light forms of *Boarmia cinctaria*, Schiff.; a *Cymatophora* or, Fb.; melanic forms of *Xylophasia monoglypha*, Hufn.; densely black forms of *Camptogramma bilineata*, L.; peculiarly bronzed and black examples of *Hadena oleracea*, L.; and dark *Agrotis lucerneæ*, L. Mr. Kane pointed out that these four species were captured in a damp and dark locality, and all showed a strong melanic tendency. Some interesting notes were contributed by Mr. Kane upon his exhibits, and a discussion followed. Mr. Purdey, of Folkestone, among others, the banded form of *Cidaria suffumata*, Hb.; long series of *Cidaria truncata*, Hufn., reared from ova, and including some beautiful varieties; a specimen of *Colias hyale*, L., taken at Folkestone in 1891; *Peronea comariana*, Zell., closely resembling *P. variegana*, Schiff.; and a long series of *Eupithecia stevensata*. Mr. Purdey stated that Mr. Webb had been unable to get the larvæ of this insect to feed on juniper, and Mr. Purdey said that it did not occur at the same time as *E. sobrinata*. Mr. Mera, varieties of *Lycæna icarus*, Rott., and *L. bellargus*, Rott., and some very fine varieties of *Abraxas grossulariata*, L. Mr. Oldham, a very dark specimen of *Hadena oleracea*. Mr. R. Adkin, *Hypsipetes sordidata*, Fb., and *Melanippe fluctuata*, L., and contributed notes. Mr. Herbert Williams, living larvæ of *Colias hyale*, L., from a female captured in England, and stated that he had obtained one pupa. Mr. Billups, the dipterous, *Stratiomys potamida*, Mg., and its rare hymenopterous parasite *Smicrasipes*, Sp., both having been captured in the Plumstead Marshes.—H. W. BARKER & A. SHORT.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November 14th. The President, Mr. S. J. Capper, F.L.S., F.E.S., who occupied the chair, referred to the death of Mr. J. T. Moore, who was one of the original members of the Society. Mr. John Watson, 177, Moss Lane, East Man-



chester, was elected a member of the Society. Mr. W. R. Scowercroft, of Manchester, read a paper entitled "Switzerland, a Naturalist's Paradise," in which he described a nine days' journey through Switzerland, and gave an account of the Lepidopterous and Coleopterous insects seen and captured, one of the most interesting being pale dimorphic forms of female *Colias palæno*, similar to the var. *helice* of *Colias edusa*. In all, seventy species of butterflies, fifty-nine species of moths, and forty species of Coleoptera were taken. The paper was illustrated by the specimens captured. The President exhibited a gynandromorphous specimen of *Halias prasinana*. Mr. Newstead, *Vedalia cardinalis*, which was imported into Alexandria in 1885 by Prof. Riley, of U.S.A., as a means of exterminating *Icerya egyptiaca*, a Coccid injurious to orange trees, under the supervision of Admiral Bloomfield; also the specimen of *Polyommatus batice* captured at Heswall by Master M'Fee in 1886 or 1887. Mr. Gregson, *Sesia scoliceformis* and *Æcophora grandis* from North Wales. Mr. Harker, a pale variety of *Triphæna orbona*, with the transverse lines very strongly marked. Mr. Jones, autumnal Lepidoptera. Mr. Prince, two varieties of *Bombyx rubi*, the wings of which were sub-diaphanous and the middle line distorted. Mr. Stott, a number of Coleoptera from the Swiss Alps. Mr. Newstead also exhibited a case containing the life-history of *Anthonomus pomorum*, the apple-blossom weevil.—F. N. PIERCE, *Hon. Sec.*

THE CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Oct. 28th. Mr. A. M. Moss in the chair. Mr. J. Rickard was elected a member of the Society. Mr. Wells exhibited a fine series of *Colias edusa* var. *helice*, from Sidmouth; and some good varieties of *Smerinthus tilieæ*, bred from pupæ dug up at Cambridge, one being dark slate-grey, with the posterior wings nearly black; the best variety, however, was one quite normal in marking, but with all the wings much suffused with bright crimson, the usual dark green blotches in the anterior wings standing out like crimson velvet. Mr. Farren, a long and varied series of *Xanthia aurago* and *Stauropus fagi*, including the black variety of the latter from Reading; also *Callimorpha hera* and its var. *lutescens*, from Devon. Mr. Moss exhibited a box of Lepidoptera from Windermere and neighbourhood, and stated that he had this year found the larvæ of *Cidaria reticulata*, taking twenty-seven in one afternoon: he exhibited a larva which he had preserved; this apparently, having faded somewhat in colour, was a very pale yellowish green, with a pink line on the back from the second to the fourth segment, and dots of the same colour on some of the last segments, supporting a conclusion that in a living larva the hue might extend the whole length. Mr. Moss said they appeared to feed almost exclusively on the seed of their food-plant (wild balsam), entering the seed-pod about the middle; in the daytime they were to be found resting at full length along the midrib on the under side of the leaves. Mr. Jones, some parasitical insects from a gannet (*Sula bassana*).—WM. FARREN, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—Nov. 14th, 1892.—Mr. R. C. BRADLEY in the chair. The Secretary called the attention of the Society to the death of two of its members, Messrs. J. T. Harris, of Burton-on-Trent, and Robt. Allday, of Handsworth. These were the first losses by death the Society had experienced. The following were exhibited:—Mr. W. Harrison, living larvæ of *Trochilium apiformis* from Arley; also



preserved larvæ of the same species. Mr. C. J. Wainwright, the genus *Dioctria*, including *reinhardi* from Wyre Forest, *rufipes* from Sherwood Forest and Sutton, and *baumhaueri* from Sherwood Forest. Mr. R. C. Bradley, series of *Limnobia bifasciata* and *Amalopsis littoralis* from Wyre Forest.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE ENTOMOLOGICAL CLUB.—A meeting of this Club was held at the Grand Hotel, St. Pancras, on October 4th, 1892. Dr. Philip B. Mason in the chair. Mr. R. Adkin, of Lewisham, was elected an Ordinary Member of the Club. Dr. Mason exhibited a specimen of *Hercyna phrygialis*, Hübn., a Pyralid new to the British List, which he stated was from the collection of the Rev. A. Matthews, who obtained it from Turner on his return from one of his collecting trips in Scotland. Mr. S. Stevens exhibited a *Botys* which he thought might prove to be a new species, but some of the members present considered the specimen to be a large form of *B. fuscalis*.—RICHARD SOUTH, *Hon. Sec.*

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## OBITUARY.

WILLIAM THOMPSON died at Stony Stratford, Bucks, on the 18th of October, 1892, in the 75th year of his age. For over fifty years Mr. Thompson had been interested in Lepidoptera, and has left a collection of the British species in that Order, which is almost if not quite perfect, and includes many varieties. Among his other communications to this Journal is one in which he recorded the discovery, in 1879, of *Pyrallis lienigialis*, Zeller, at Stony Stratford. He had a large circle of correspondents, by many of whom his death will be felt as a personal loss.

The Rev. ALBERT HENRY WRATISLAW died at Graythwaite, Southsea, on the 3rd of November, 1892, aged 70 years. Educated at Christ's College, Cambridge, Mr. Wratismaw graduated third classic and a senior optime in 1844. He was a fellow and tutor of his college, and was appointed Head Master of Felstead School in 1852, and of King Edward the Sixth's School, Bury St. Edmund's in 1855. This latter position he held with distinction until 1879, when he retired. From 1879 until 1887 he resided in Pembrokeshire, where he held the college living of Manorbier. Mr. Wratismaw studied both Lepidoptera and Coleoptera, but he was probably best known to entomologists as the first to detect, or perhaps it would be more correct to say rediscover, *Dianthacia irregularis (echii)* in this country. He was not a frequent writer on entomological subjects, but he contributed several notes, both to the Ent. Mo. Mag. and Entom.; his 'Reminiscences of Entomology in Suffolk' attracted the attention of lepidopterists to the district around Tuddenham St. Mary, in that county. Some four or five years ago his sight failed him, and his valuable collection passed into the possession of Mr. J. B. Hodgkinson.

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ROBERT ADKIN, F.E.S.  
T. R. BILLUPS, F.E.S.  
W. LUCAS DISTANT, F.E.S., &c.  
EDWARD A. FITCH, F.L.S., F.E.S.  
MARTIN JACOBY, F.E.S.  
J. H. LEECH, B.A., F.L.S., F.E.S.

DR. D. SHARP, F.R.S., F.E.S., &c.  
G. H. VERRALL, F.E.S.  
W. WARREN, M.A., F.E.S.  
J. J. WEIR, F.L.S., F.Z.S., F.E.S.  
F. BUCHANAN WHITE, M.D.,  
F.L.S., F.E.S.

"By mutual confidence and mutual aid  
Great deeds are done and great discoveries made."

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VOLUME THE TWENTY-SIXTH.

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—  
1898,

"As geology plainly proclaims that each land has undergone great physical changes, we might have expected to find that organic beings have varied under nature, in the same way as they have varied under domestication. And if there has been any variability under nature, it would be an unaccountable fact if natural selection had not come into play. It has often been asserted, but the assertion is incapable of proof, that the amount of variation under nature is a strictly limited quantity. Man, though acting on external characters alone and often capriciously, can produce within a short period a great result by adding up mere individual differences in his domestic productions, and everyone admits that species present individual differences. But, besides such differences, all naturalists admit that natural varieties exist, which are considered sufficiently distinct to be worthy of record in systematic works. No one has drawn any clear distinction between individual differences and slight varieties; or between more plainly marked varieties and subspecies, and species. On separate continents, and on different parts of the same continent when divided by barriers of any kind, and on outlying islands, what a multitude of forms exist, which some experienced naturalists rank as varieties, others as geographical races or subspecies, and others as distinct, though closely allied species!

"If then, animals and plants do vary, let it be ever so slightly or slowly, why should not variations or individual differences, which are in any way beneficial, be preserved and accumulated through natural selection, or the survival of the fittest? If man can by patience select variations useful to him, why, under changing and complex conditions of life, should not varieties useful to nature's living products often arise, and be preserved or selected? What limit can be put to this power, acting during long ages and rigidly scrutinising the whole constitution, structure, and habits of each creature,—favouring the good and rejecting the bad?"

DARWIN, *The Origin of Species*.



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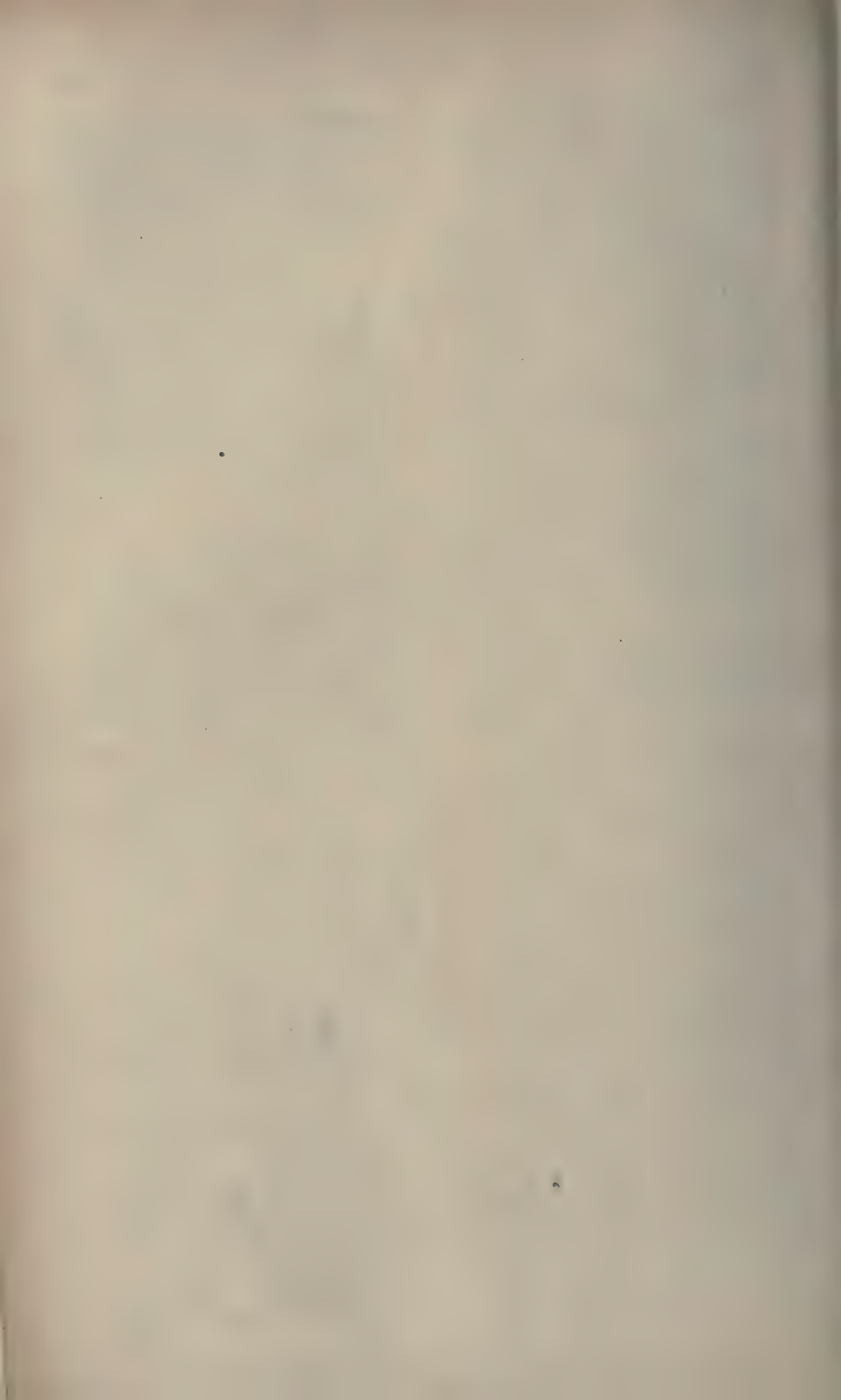
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## EDITORIAL.

It is with great pleasure that we have to announce that Mr. ROBERT ADKIN, F.E.S., who is already well known to our readers, has kindly consented to act on the Reference Committee of this Journal.

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### THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. PERRY COSTE, B.Sc. (Lond.), F.C.S., F.L.S.

THE present article is condensed from a paper read before the Linnean Society last June, and detailing an investigation into the red colour produced by wet potassium cyanide on certain yellow species of Lepidoptera. Referring my readers to my previous articles in the 'Entomologist'\* for an account of the earlier stages of the work, I pass at once to describe the new results.

Having succeeded in my attempt to redden *C. edusa* and *G. rhamni* by exposing them to the action of cyanide in a sloppy condition, I next proceeded to test a number of yellow species in order to determine whether this phenomenon was peculiar to *edusa* and *rhamni*, or general among yellow species. I succeeded in easily obtaining fine red blotches in *Callidryas eubule*, *Terias nise*, *T. rubella*, *T. nicippe*, and (later) in *G. cleopatra*, *Catopsilia crocale*, and *C. catilla*, the reaction being remarkably fine with *G. cleopatra*, since nearly the whole wing assumed a blood-red colour.

In several of these experiments the fact was very noticeable that there was, so to speak, a race between the solvent, and the reddening, actions of the cyanide; the more quickly that the yellow was dissolved, obviously the less would be left to be

\* Vol. xxiv. pp. 163—167 (1891).



reddened.\* Although, however, thus far successful, I have found it utterly impossible to effect a reddening of a large number of other species, e.g., *Actias luna*, *Charaxes athamas*, *T. pronuba*, *C. hera lutescens*, *R. cratægata*, and various others. As I have pointed out in my previous articles, the failure to redden *pronuba* and *hera* was peculiarly disappointing, for reasons that I have already explained. Now, after experimenting on very many species with KCN, I found myself face to face with one general result of perhaps some significance, viz., that all the reddened species belong to the Rhopalocera; in no case had the reaction been obtained with any Heterocera examined. It seemed to me especially striking that even in the Geometræ I got no results, for one would expect the yellow of the small brimstone-moth (*R. cratægata*) to be very similar to that of *rhamni* or *Colias* sp.; and, moreover, it is also affected by acids and alkalis in a similar way. However, the fact remains that, so far, this reaction cannot be obtained with Heterocera.

After further experimenting I was struck by another fact, viz., that not only was the cyanide-reaction confined to the Rhopalocera, but within yet narrower limits, viz., to the family of the Pieridæ. Although yellow or orange species from the families of Papilionidæ and Nymphalidæ have been tested, these fail entirely to give the reaction. On the other hand, species which are—superficially—of such different yellows† as *rhamni*, *edusa*, *hyale*, and (the under surface of) *Catopsilia crocale*, all yield this cyanide red. We must, therefore, conclude for the present that the yellow pigments of the Pieridæ, in spite of their strong resemblance in other respects to the pigments of other families,‡ have, nevertheless, a marked peculiarity of constitution, which is evidenced by their ready reaction with cyanide.

## II.—BEHAVIOUR OF CHESTNUT SPECIES.

Having in view the strong similarities between yellow and chestnut (*vide* my former articles), it seemed to me very desirable to ascertain whether the cyanide-reaction could be obtained with any chestnut species, many of which (chiefly species of Nymphalidæ) were accordingly tested. In no case was any reddening effected. This reaction remains, therefore, confined to the yellow and orange Pieridæ.§

\* The intense yellow with which the mass of cyanide was stained in many experiments was very notable. In one case I noted a slight reddish tinge on the cyanide. This is of interest in connection with the Lithium results, to be considered further on.

† This meets the objection, which might be otherwise raised, that the orange Nymphalidæ and the yellow Papilionidæ are superficially dissimilar from *Colias* and *Gonepteryx* sp.

‡ See my previous articles in 'Entomologist,'—Yellow and Red *passim*.

§ It would be exceedingly interesting to test any chestnut species of Pieridæ, if any such are known.

## III.—EXPERIMENTS WITH OTHER CYANIDES.

Having established the occurrence of this reaction, the next step was to endeavour some explanation of it. It seemed to me almost certain, originally, that the effect was due to the cyanogen radicle in the compound KCN; and it therefore was important to determine whether or no other cyanides would have a like effect. A series of experiments was therefore instituted to clear up this problem.\* Of course the nearest analogue to KCN is sodium cyanide, and the action of this reagent† was therefore tested by exposing to it several yellow species that were known to react readily with KCN. These included *Catopsilia crocale*, *rhamnii*, *edusa*, *hyale*. Although no bright red was produced as in the potassium cyanide experiments, yet there is a clear, though weak, tendency in the same direction, for a distinct patch of dull claret-red appeared on the *cleopatra* wing; and it appears to me especially interesting that in *Catopsilia*, although no red was found, yet the dull yellow or lemon-yellow of the natural insect was transformed into orange, since my former experiments led me to conclude that orange was a stage usually passed through in the evolution of red from yellow. Another noticeable point was the very rapid solvent action of the damp sodium cyanide on the yellow pigment of *cleopatra*.

Having thus detected a faint action of this kind in sodium cyanide, I thought it of interest to experiment with a few other cyanides, and accordingly the effect of mercury, zinc, and copper cyanides was tested upon *G. cleopatra* and *C. crocale*. These reagents, however, proved to be unworkable, as indeed might be anticipated in view of their physical characters. It was, however, observed that in the wings of *G. cleopatra* placed upon mercury cyanide and copper cyanide the veins had become of a bright *holly-green*. It is clear that the reddening reaction can only be expected in the case of a cyanide that can be kept in the sloppy-solid condition already referred to; and consequently when the physical character of any cyanide is such that it cannot well be kept in this condition, *i. e.*, when it is comparatively insoluble, it is useless to attempt any experiments with it.

Besides testing these simple cyanides, I also tried what could be done with the sulphocyanide (thiocyanate) of ammonium, and the ferri and ferrocyanides of potassium. In no case was any sign of reddening observed, although the experiments were made upon species that had been proved to be very susceptible to the

\* These experiments are not detailed in the chronological order in which they were made.

† This is by no means so easy a reagent as KCN to work with, on account of physical differences between the two salts. It will be understood that in the whole of the experiments detailed in this paper the reagents used were in a sloppy-solid or stiff-mud condition.



action of potassium cyanide. This result, although at the time disappointing, is in no way surprising, if we take into account the constitution of these compounds, and the differences existing between them and potassium cyanide; but to this it will be necessary to return very shortly. Nevertheless, although supposing that the reddening reaction were due to the cyanogen radicle, it would still be very interesting to ascertain whether nitrogen in any other form would have a like effect. A series of experiments was therefore made with a number of ammonium salts. In no case was any "cyanide reaction" obtained.\*

In addition to these a number of nitrates were tested in order to determine whether nitrogen in this form would effect the reaction. The result was that in no case was any reddening observed.

Lastly, a few experiments were made with trinitrophenol (picric acid) and morphine hydrochloride on wings of *C. edusa* and *G. cleopatra*, in order to test the behaviour of nitrogen in yet other forms. The results were in both cases entirely negative.

We have arrived, then, at this result: that potassium cyanide produces this red rapidly and markedly; that sodium cyanide shows indications of the same tendency, but in a feeble degree only; that the ferrocyanides and sulphocyanides are entirely without action, as is also nitrogen, in the form of ammonia, of nitrates, &c. Now everybody of course is familiar with the fact that potassium cyanide, but especially when damp, smells strongly of hydrocyanic acid; in fact there is always present free hydrocyanic acid; and, considering the feeble affinities of this acid, it is not surprising that water should increase the amount of free acid present by dissociating the potassium cyanide. Sodium cyanide also smells of hydrocyanic acid, but far less strongly; while the cyanides of zinc, copper, and mercury† are odourless. These facts, together with the experiments just detailed and the comparative efficacy of the several cyanides, led me to conjecture that my original supposition was practically correct, that the efficient agent in producing the reddening effect was free hydrocyanic acid produced by the dissociation of potassium cyanide. On this supposition one could understand both the superior efficacy of potassium to sodium cyanide, and the inefficacy of the ferro- and ferricyanides, since in these cases there would be no free hydrocyanic acid present, as also none in the sulphocyanides. The facts thus pointed very strongly to hydrocyanic acid as the active agent.

\* It will of course be understood that in all these experiments made to test the efficacy of various reagents in producing the "cyanide reaction," the test was made by submitting to their action yellow species which were known to react readily with KCN to produce the red.

† The strong affinity of mercury for HCN is well known.



In order to test this hypothesis, a weak solution of hydrocyanic acid was obtained,\* and some experiments made therewith. To my great disappointment it was found, however, that this weak solution of HCN had *no effect at all* upon the wings immersed in it. The experiments were varied in several different ways, but the attempt to produce the cyanide red proved a total failure; and the result, up to the present, is, therefore, that the reddening is due not to hydrocyanic acid as such, but to potassium cyanide, or to potassium cyanide and hydrocyanic acid together. That an actual combination does take place between the yellow pigment and the potassium cyanide (or the hydrocyanic acid, under the influence of potassium cyanide), I can hardly doubt. The weak but positive effect of sodium cyanide on the one hand, and the great number of wholly negative results obtained—as now to be related—from a number of varied reagents, seem to justify this view; but it is proposed, as opportunity offers, to carry forward this investigation in several directions.

(To be continued.)

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## FURTHER REMARKS ON THE EARLIER STAGES OF *COLIAS HYALE*.

By F. W. FROHAWK, F.E.S.

It is doubtful if either of our two species of *Colias* ever survive an English winter in a state of nature, excepting perhaps in the mildest and most sheltered spots on the southern coast, in whatever stage they might undergo hybernation. I believe it is generally supposed that they hibernate in the imago state, which, however, is contrary to my observations respecting *C. hyale*, and from the following notes I think it may safely be presumed that in a natural state *hyale* passes the winter in the larval condition; at the same time I feel positive that but very few survive the climatic changes of an English winter, which idea is strengthened by the mortality occurring among a large number of *C. edusa* larvæ, 170, which I had feeding and growing satisfactorily until the middle of last October, when a week of severe wintry weather set in, causing all the larvæ to cease feeding, and, with few exceptions, remain motionless. Many died daily, and, excepting a few full-grown larvæ, none survived the effects of that cold sunless week, although mild and bright weather reappeared. Undoubtedly the first severe frost would be fatal to larvæ feeding in exposed places, which would account to a great extent for the general absence of *Colias* throughout the country in ordinary years. When a "*Colias* year" comes round, it is occasioned by

\* The ordinary B. P. 2 p. c. solution of the acid was used.

an invasion by the butterflies in the spring, which are the parents of the great flight in the following August, and as long as the weather remains suitable a succession of broods are produced. The following notes upon *C. hyale* are taken from my note-book verbatim, and refer to the larvæ mentioned, Entom. xxv. 274.

November 26th, 1892. Figured *hyale* larva hybernating, it having now reached its thirty-ninth day of hybernation, and has remained in the same position the whole time. It measures now three-sixteenths of an inch, having decreased one-sixteenth of an inch since entering hybernation. The other two larvæ have also remained motionless, and are now almost completely enclosed by the three leaflets of clover, having withered and folded loosely around them, which serves as a protective covering during the winter.

Of those larvæ which hatched from eggs deposited September 20th, I find upon examination there are four in the second skin; three of them are apparently hybernating, as they are resting upon a little carpet of silk spun down the centre of the leaflet. One, which is somewhat in advance of the others, is still feeding; another, making the fifth, is much more advanced, being in its third skin, *i.e.*, after second moult, and measuring three-sixteenths of an inch long; it is active, occasionally moving about from leaf to leaf and feeding. All these five are kept during the greater part of the day and night, from about 10 a.m. to 12 p.m., in a temperature of about 60° to 64°.

To-day, December 17th. The three larvæ first mentioned have now attained their *sixtieth day* of hybernation, and are apparently in perfect health, and have remained absolutely motionless throughout. The other five larvæ are hybernating; the one in the third skin (having now attained the same size as the first three) commenced hybernating on the 11th, it having until then fed daily. It rests upon a little layer of silk, precisely in the same manner as the others, and I cannot induce it to move, although for three days it was subjected to a warm temperature of 64°, and upon gently touching it, it remained perfectly still.

I have now placed the plants containing all eight larvæ in a fairly uniform cool temperature, averaging about 45°.

I think from the above, taking all into consideration, that without doubt *C. hyale* hybernates as a larva.

Under artificial means, in an unusual heat, *C. hyale* could be forced; and, in fact, at a recent meeting of the South London Entomological Society, Mr. H. Williams exhibited a full-fed larva and a pupa which he had reared by keeping them in a temperature reaching as much as 86°. They were from the same parent as my larvæ, the eggs being deposited on September 20th. I have purposely kept mine in as natural a condition possible, in the hope of clearing up the question—In what stage does

*C. hyale* hibernate? So far, I think it certainly may be said that it hibernates in the larval condition.

Firstly, for what motive other than hibernation did all three larvæ at the same time carefully spin upon the surface of the leaves little carpets of silk and thereon rest, which process was afterwards repeated by the other five?

Secondly, when placed in a temperature of 73° on October 23rd, five days after entering hibernation, two moved off their resting-places, but shortly returned and settled down as before (see Entom. xxv. 274).

Thirdly, why cannot they be induced to leave their hibernaculum?

Lastly, could a non-hibernating larva exist for sixty days without food and remain apparently in a healthy state?

Balham, December, 1892.

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## LIFE-HISTORY OF *COLIAS HYALE*.

BY HERBERT WILLIAMS.

IN addition to the interesting notes by Mr. F. W. Frohawk on this species (Entom. xxv. 271), it may be well to record the successful rearing of the perfect insect during the late autumn of 1892.

On the 19th September last, Mr. F. W. Hawes and myself, whilst collecting together, had the good fortune to capture at Northfleet, Kent, two female *Colias hyale*, which, under the genial influence of the sun at North Finchley on the 20th and two following days, deposited eggs freely on plants of *Medicago lupulina* and clover; and from my share of the resulting ova I have taken the opportunity of making the following notes.

The egg in shape is very like the seed of the garden lettuce, very small in circumference at the base, and gradually increasing in thickness until about two-thirds of the distance towards the apex; it then narrows off rapidly to a blunt point. The egg stands erect, like those of the "whites," and has about fourteen longitudinal ridges, which do not, however, meet at the top, but terminate at the circumference of a small circle, the intervening depressions between these ridges being most delicately reticulated transversely. When first deposited, the egg is of a very pale straw-colour, inclining to white, but it rapidly deepens to a reddish orange, until about twenty-four hours before hatching, when it changes to a bluish black.

The first egg hatched on the 29th September, and the young larva emerged from an opening in the side of the egg, leaving the top intact. The colour of the newly-hatched larva is a greyish green, with a black head, and is entirely without markings,



except a green mid-dorsal stripe, which is very little darker than the remainder of the body. The whole of the body, including the head, is studded with minute bristles, and on the segment immediately following the head are about half a dozen short hairs of equal length, and terminating in an abrupt point; these project forward, and are very conspicuous against the jet black of the head. The young larvæ fed readily upon the leaf of the common clover, and rested along the midrib of the leaf. When first hatched they devoured the epidermis only, though in the middle of each patch which they had nibbled there was usually to be seen a hole breaking right through the venous structure of the leaf.

On the 9th October one larva changed its first skin, and the head now lost its black colour and assumed a light brown appearance, being studded with minute blackish spots, a very short light-coloured hair springing from the centre of each. The ground colour of the body is about the same tint as in its first skin, but the hairs now covering the body each spring from the centre of a whitish spot. Extending down the middle of the back is a furrow, entirely destitute of these hairs.

On the 20th October the second change took place, and the larva in its third skin exactly corresponds in colour with a clover leaf, both head and body being uniform in colour, and the latter densely wrinkled transversely. On each side of the body, extending the whole length in the region of the spiracles, is a whitish yellow line, the upper surface of which shades off gradually into the green, but having the line of demarcation on the lower side very distinct; midway between each spiracle there is a very faint pink spot, but at this stage it is only discernible in a very good light.

On the 2nd November another change took place, and the larva now appeared in its fourth and, as events proved, its last skin. When full fed the larva is about  $1\frac{1}{8}$  inch long, cylindrical in form, and having a head very small in proportion to the body, which is of a unicolorous dark green, velvety in appearance, owing to the large number of short hairs, and having the pinkish spots in the whitish yellow line, previously referred to, very distinct. The full-fed larvæ of *C. hyale* and *C. edusa* are very similar, but *C. hyale* has longer and darker hairs, and a rougher and less rounded appearance.

On the 9th November the larva spun a few threads of silk, stretched across from two clover leaves to the side of the jar, and beneath this slight tent, which could afford no real protection, it turned to a green pupa on the 10th November.

The pupa is attached by the tail, and is also supported by a belt in a vertical position, head upwards, as is frequently the manner of *Pieris brassicæ*. It has a pointed head, rounded body, a ridge extending over the back of the thorax, most prominent at

the lower end, and ample wing-cases. The dorsal and ventral areas are completely divided by a light lateral stripe, which is conspicuous at the head, and then grows lighter until below the extremity of the wing-cases, when it becomes a well-marked yellow line, interrupted with faint pink spots. On each side of the body, below the wing-cases, is a dull red-brown mark parallel with the longest axis of the body, darkest at its upper extremity, and shading off gradually downwards. The pupa is much lighter on the back than the remainder of the body, and the wing-cases have one minute black spot in the centre, and six along that part which corresponds to the hind margin of the fore wings in the imago. The pupa of *C. hyale* is almost identical in shape, colour, and markings with that of *C. edusa*, but perhaps it is a trifle more slender and upright.

On the 19th November a slight change was perceptible in the pupa, the wing-cases appearing more opaque and of a yellower tint, and the position of the antennæ could be traced by their light brownish pink appearance, whilst on the following day the pink margins of the wings showed through quite plainly, the antennæ being still more defined, and the head and ridge on the thorax a light brown. By the next morning the dark markings of the wings were to be seen quite distinctly; and on the 22nd November the imago emerged, a male. This was followed on the 25th November by a second, also a male.

I believe this is the first time that *Colias hyale* has been recorded bred in captivity in this country.

There being apparently some doubt as to the state in which *C. hyale* would, under natural conditions, pass the winter in England, I should mention that, bearing in mind the late date at which the ova were obtained, the young larvæ, as soon as they hatched, were placed in a jar in a room where a fire was burning for about twelve out of the twenty-four hours of each day, in order to overcome, if possible, any inherent tendency towards hybernation. Generally speaking, the maximum temperature to which the larvæ were subjected was about 80° F., this reading being taken in the early evening; the minimum (during the morning) was, as near as possible, 40° F.

At the time of writing (December 10th) three larvæ, kept indoors in a low temperature, are still surviving, they having been absolutely quiescent for about thirty days, and are, so far as can be judged at the present time, settled for hybernation in the larval state. It will be an interesting point should these prove capable of undergoing the ordeal of a winter in our uncertain and often rigorous climate, and will tend to throw considerable light on the vexed question as to the state in which the genus *Colias* really does hybernate.

30, Hanley Road, Hornsey Rise, London, N., Dec. 10, 1892.



## NOTES FROM THE NORTH-WEST COUNTIES.

By J. ARKLE.

(Concluded from vol. xxv. p. 318.)

ABOUT a week after, on the 29th, I paid another visit to Witherslack, *viâ* Carnforth and Grange. *N. russula* was then comparatively scarce, and *N. plantaginis* so rubbed as to be not worth taking. The habit of the latter moth had quite altered; instead of flying somewhat lazily over the heath it shot up high over our heads, and, as a rule, made for the birch trees on the border of the Moss. The insects were as usual; *C. typhon* was still on the wing, but *C. imbutata* and *M. schulziana* were most numerous. The borders of many of the fields under tillage were beginning to look gay with the corn-marigold (*Chrysanthemum segetum*), a truly beautiful plant in its native habitat. I had only met with it once before—in Ireland, between Dublin and Bray. On the Kent embankment grows a wiry, olive-green sedge. Some of this, with the corn-marigolds, made a very stylish bouquet, which we took home. The chief locality, however, on this second visit to Witherslack, was the Pug Rocks, which we found alive with “whites”—*Pieris brassicæ* and *P. rapæ*, *V. urticæ*, *A. aglaia*, *Satyrus semele*, *E. ianira*, *C. pamphilus*, *Polyommatus phlœas*, and *L. icarus*. Other insects were *Pyrausta aurata* (*punicealis*), *Herbula cespitalis*, *Platyptilia ochrodactyla*, and *Mimæseoptilus pterodactylus* (*fuscodactylus*). I captured one specimen of the white-looking *Leioptilus osteodactylus* by the roadside near Grange. Searching the Pug Rocks, which are a mile or so away through the village from the ‘Derby Arms,’ rewarded us with a fine male *Stilbia anomala*, several *A. marginepunctata* (*promutata*), *Sciaphila penziana*, and another pretty species with a very distinct figure 8 marked obliquely on each of its grey upper wings—*Scoparia gracialis*. The local form of *A. aglaia* is a handsome one, and completely eclipses the Welsh specimens, in which the ground colour of the wings is a dull ochreous yellow. The Witherslack *aglaia* is altogether a brighter insect. The black spots and marks upon the wings are about as black as they can be, the basal suffusions are nearly black instead of dark russet, the marginal spots are whitish, there is a whitish suffusion along the region of the costal margin, and the ground colour is altogether brighter than, I may add, that of any specimens I have seen. The local form of *S. semele* also deserves comment. It is a very dark one, and the light-coloured patches on the upper wings, in which are placed the ocelli, almost disappear, especially in the females.

Three years ago, when I was last in the district, the additional way of reaching Morecambe from Lancaster was by the traps plying the four miles by road. These have almost disappeared, and there is now a capital tram-service all along the route and



thence to Heysham. It is, of course, the quickest way by rail; but if you have the day before you it is a treat to enjoy the morning breeze on the top of the spacious trams. The horses—all bays—are a fine set, and they take the hills gallantly at the charge. The summer day at Morecambe is nearly always a trippers' day, and the fun centres inside and outside the People's Palace.

The best way to the Heysham Moss is to leave the tram at the second lane from the left, past the 'Cumberland View Hotel,' then almost straight on for about a mile to the Fanny House Farm. A few yards on this side of the farm, a mile or so of rough road leads through the fields to the right and to the Moss. I made a couple of visits, and they were, comparatively, disappointing. Among the reeds growing in the ditches which border this rough road I netted a dragonfly, one of the little common blue species, *Agrion cyathigerum*, but the district strikes me as being rather deficient in dragonflies.

On the wayside nettles (July 25th) larvæ of *V. atalanta* were numerous enough. On the Moss the insect list was nearly the same as at Witherslack; *Agrotis strigula* (*porphyrea*) in fine condition, *Miana arcuosa*, and *Aphelia osseana* (*pratana*), which I mistook at first for *T. rufana*, being additional moths. Larvæ of *E. pulchellata* were again in the flowers of the foxglove, and I captured a few imagines of *E. nanata* which rose from the heather. *C. typhon* and *C. imbutata* were more numerous, and the former less worn, than at Witherslack. The form of *A. myrtilli* is here a very beautiful one; the ground colour of the upper wings is a rich purple. Flying swiftly across the Moss, and always in a high bee line, were great bat-like moths, which we put down as *Bombyx quercus*. It was a great pleasure to meet on this occasion with Messrs. J. B. Hodgkinson and son.

Our second visit took place on the 28th, with splendid weather and similar captures. I am sometimes asked to name a convenient centre from which to work this rich entomological district. I should recommend Carnforth, where there is plenty of good accommodation; and a pleasanter place wherein to eat, rest, or halt for the night could not be than the 'Crown Hotel,' Arnside.

Chester, September 27, 1892.

## THE BUTTERFLIES OF ENFIELD.

BY HENRY D. SYKES.

THE list of Middlesex butterflies compiled by Mr. Cockerell ("A Preliminary List of the Insect-Fauna of Middlesex, Entom. xxiv. 30—32 and 65) contains altogether forty-four species. I find, on examination, that twenty of these at least are old records,

—that is to say, records of species captured ten years or more ago; for the remaining twenty-four species records of capture apparently within comparatively recent years are given.

I have been collecting Lepidoptera in Enfield since the year 1887, and during these six years I have already met with all the species for which recent records are given, *Argynnis euphrosyne*, *Vanessa antiopa* and *Thecla w-album* only excepted; and I have also had the good fortune to meet with no less than four species for which only ancient records are given, viz., *Argynnis paphia*, *V. polychloros*, *Lycæna corydon*, and *Hesperia thauwas*.

Seeing, therefore, that my list of twenty-five species of Rhopalocera contains only species noticed by myself personally in Enfield during the past six years, perhaps a few notes concerning them may not be out of place in this Journal.

### *Pieridæ.*

*Pieris brassicæ* and *P. rapæ*. Very common.

*P. napi*. This is also a very abundant species; at some periods of the year it is even commoner than *rapæ*.

*Euchloë cardamines*. Abundant.

*Colias edusa*. Fairly common this year.

*Gonopteryx rhamni*. Rather scarce; not more than two or three specimens seen on an average each year.

### *Nymphalidæ.*

*Argynnis paphia*. A single male specimen, July 23rd, 1892. I regret to say that I failed to catch this specimen, but I feel certain of the species; it flew suddenly past me whilst I was standing in a clearing in a wood, and alighted on a flower just in front of me.

*Vanessa polychloros*. Two anterior wings and thorax discovered in a spider's web stretched in front of an open window of a loft, March, 1891. The markings on the wings were perfectly distinguishable.

*V. urticæ*. Abundant.

*V. io*. Common.

*V. atalanta*. Commoner than the preceding species. It is usually most abundant at the end of September and beginning of October, but this year (1892) it has been common all the year through, hybernated specimens being unusually abundant. The variety with "the red band nearly divided in two a little below its middle" not uncommon; I have one specimen in which the band is completely divided.

*V. cardui*. One specimen, August, 1888. Several seen this year.

### *Satyridæ.*

*Pararge megæra*. A single specimen captured, August 17th, 1889.

*Epinephele ianira*. Extremely common. The form of the male with orange colouring on the fore wings is of frequent occurrence.

*E. tithonus*. A single specimen captured, July, 1888.

*E. hyperanthes*. I was this year informed of a locality for this species by a former resident of Enfield. I paid a visit to the spot in July last, and succeeded in capturing two specimens. This species is also mentioned by Mr. Watts as being abundant at Pinner and Ruislip (Entom. xxiv. 65).

*Cænonympha pamphilus*. Common.

### *Lycænidæ.*

*Thecla quercus*. Occurs in the same locality as *Epinephele hyperanthes*. The only record in Mr. Cockerell's list is that of a single larva taken by Mr. South at Mill Hill.

*Polyommatus phlæas*. Very common.

*Lycæna icarus*. Fairly common; abundant in 1887.

*L. corydon*. A single much-worn and battered specimen of the male taken in July, 1887; it was flying in a field where *icarus* was swarming. The only record in Mr. Cockerell's list is "Old Oak Common, one example, end of July, about 1869 (Godwin)." Newman also says, "Very rare near Whimbley—F. Bond." Mine is apparently the last recorded capture in the county.\*

### *Hesperiidæ.*

This family is well represented in the district: I have taken all the four species recorded below in one field, and (with the exception of *Hesperia thaumas*) take them there still.

*Syrichthus malvæ*. Fairly common.

*Nisoniades tages*. This species was omitted by Mr. Cockerell in his original list, but is subsequently recorded, in the same volume of the 'Entomologist,' by myself and by Messrs. Watts and Biggs (pp. 41, 65, and 98). It is quite as abundant in the district as ever, but is (as far as my experience goes) extremely local.

*Hesperia thaumas*. No recent record of the capture of this insect is contained in the "Preliminary List." As I have before stated (Entom. xxiv. 41, 269), I found a locality where it was swarming in 1888 and 1889, but since then have not seen a single specimen. I suppose it is now extinct in Middlesex.

*H. sylvanus*. Common, but local.

In addition to the above, I have heard on good authority that *Colias hyale*, which is not included in the "Preliminary List," was taken this year in a nurseryman's garden at Enfield Highway.

\* Since writing the above, I have come across a record of the capture of this species by Dr. Percy Rendall, near Hounslow, on August 1st, 1887 (Entom. xx. 229), so that mine is *not* the last capture in the county.



I have not met with this species myself, and so have not included it in my list.

It is by no means improbable that other species of *Rhopalocera* may occur in the Enfield district, as the area I have worked is extremely limited; in fact, twenty of the species contained in the above list were captured in a single field, about three acres in extent, situate a few hundred yards from the house. Of the other five species, two (*V. polychloros* and *P. megæra*) were taken on "The Cedars Estate" itself, and the other three (*A. paphia*, *E. hyperanthes*, and *T. quercus*) in a wood which is distant about one mile.

The Cedars, Enfield, October 1, 1892.

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### ADRASTUS PALLENS, FAB., A BRITISH SPECIES.

By REV. H. S. GORHAM, F.Z.S., &c.

THE species standing in our lists as *Adrastus limbatus*, Fabr., is not that species according to Riesenwetter, but agrees with *Adrastus pallens*, Fabr., and this appears to me to be the true determination. All the specimens in my own collection are to be referred to the latter. *A. limbatus*, F., is, among other points, to be separated from *A. pallens* by having the third joint of the antennæ much longer than the second, and the legs more or less infusate. There is a little confusion in Riesenwetter's diagnosis of *A. limbatus* from the repetition of the word "*testaceis*," where "*infuscatis*" is plainly the word he intended. The antennæ in *A. limbatus* are also infusate, with the base yellow. In *A. pallens* they are wholly yellow, at the most faintly infusate in the apical three or four joints. There is a variety of *A. pallens* with the suture infusate; this is (according to Herr von Riesenwetter) the *Elater limbatus* of Paykull and Gyllenhal. The synonymy of our species will therefore stand:—

#### 1. ADRASTUS PALLENS.

*Elater pallens*, Fabr., Syst. El. ii. p. 242.

*Adrastus pallens*, Erichs., in Germ. Zeitschr. iii. 125;

Riesenw., Nat. Ins. Deuts. iv. 2, 242.

*A. limbatus*, Waterh., Cat. Brit., and English authors, *nec* Fabr.

Var. *Elytrorum sutura infuscata*.

*Elater limbatus*, Payk., Faun. Suec. iii. p. 43; Gyll., Ins. Suec. i. p. 433.

*E. pusillus*, Herbst., Käf. x. p. 85, t. 165, f. 11.

#### 2. ADRASTUS PUSILLUS.

*Elater pusillus*, Fabr., Syst. El. ii. p. 246.

*Adrastus pusillus*, Erichs., in Germ. Zeitsch. iii. p. 128;

Redt., Rüst., &c.; Riesenw., Nat. Ins. Deuts. iv. 2, p. 243.

Shirley Warren, Southampton, Nov. 4, 1892.

## LEPIDOPTERA AT LIGHT.

MALE v. FEMALE INSECTS AT LIGHT.—I can corroborate Mr. Arkle's experience of males coming to light (*Entom.* xxv. 320). For some years I have taken *Neuronía popularis* abundantly, and they have all been males; also all the specimens of *Himera pennaria* that have been attracted by light have been males. I found the females of *H. pennaria* this season at rest on the tree trunks. *N. popularis*, I may add, is remarkably punctual in its appearance at light, for many years coming at 9.30 p.m., till this last season, when it came at 10 p.m.—GEORGE BELL ROUTLEDGE; Stone House, Hayton, Carlisle.

ILLUMINATED MOTH-TRAP.—My moth-trap, which had been out of repair, was set going on Nov. 12th for a few nights. The weather was very favourable for light, and I obtained six *Ptilophora plumigera* (I have only taken one specimen of this moth here before), one *Pæcilocampa populi*, four *Asteroscopus sphinx*, besides a lot of *Hybernia aurantiaria*, *Oporabia dilutata*, *Himera pennaria*, and a few *H. defoliaria*. I have now put the trap away for the winter.—W. M. CHRISTY; Watergate, Emsworth, Hants, Nov. 20, 1892.

Having read Mr. Christy's notes on the results of his illuminated moth-trap,\* I constructed one very much on the same principle, and set it every night from Aug. 17 to Oct. 24, last year, at Oxtou, near Exeter, with the following result:—*Psilura monacha* (male and female), *Cilix glaucata* (one), *Leucania pallens* (one), *Tapinostola fulva* (one), *Hydræcia nictitans* (one), *Neuronía popularis* (numbers, all males, sixteen in one night), *Luperina testacea* (several), *L. cespitis* (one), *Noctua plecta* (several), *N. umbrosa* (three), *N. xanthographa* (numerous), *Orthosia macilenta* (one, the first in the locality), *Anchocelis lunosa* (one), *Hadena protea* (one), *Miselia oxyacanthæ* (one), *Rumia luteolata* (several), *Eugonia alniaria* (*canaria*) (one), *E. quercinaria* (one), *Himera pennaria* (two males), *Cleora glabraria* (four, not taken here before), *Cleora lichenaria* (three), *Acidalia bisetata* (common), *A. aversata*, *Oporabia dilutata* (several), *Larentia viridaria* (several), *L. didymata*, *Thera variata* (one), *Melanthia ocellata* (two), *Coremia designata* (several), *C. ferrugata*, *Anaitis plagiata* (one), *Herbula cespitalis* (several), *Scopula ferrugalis* (one), *S. decrepitalis* (one), *Alucita hexadactyla* (*polydactyla*) (several), *Crambus tristellus* (several), *C. genicuellus* (common), *C. culmellus*. Some Micros not yet identified. The best night was Sept. 1-2; catch:—*Psilura monacha* (male), *Neuronía popularis* (sixteen males), *Noctua plecta* (one), *N. umbrosa* (two), *N. xanthographa* (three), *Eugonia alniaria* (one), Crambi and Micros. The bulk of the above insects were quite perfect, and, in the case of worn and injured insects, they do not seem to have suffered from being in the trap. Should your readers desire it, I will give a full description of the trap, with dimensions. — E. F. STUDD; 130, Queen's Gate, S.W.

From Nov. 7th to Nov. 12th I had fine sport with *Pæcilocampa populi* on the gas-lamps, having taken forty during the week. The insect is generally considered rather rare here, and I have not heard of it being taken in such numbers before. The nights on which there was a thick fog seemed to be the most favourable.—DOUGLAS H. PEARSON; Chilwell, Notts, Nov. 17, 1892.

\* See *Entom.* xxiii. 231.—Ed.

## NOTES ON VANESSIDÆ IN 1892.

THE GREAT ABUNDANCE OF PYRAMEIS ATALANTA AND *P. CARDUI*.—This year has not only been an *edusa* year, but also a great *atalanta* year. Early in the season I could not help noting the fact that hibernated specimens of *P. atalanta* were much commoner than usual, and, judging by their numbers, I should say that most of the specimens had migrated from the Continent. They continued on the wing until the beginning of July. From June to September the larvæ were found in abundance almost wherever nettles grew, and their variation was remarkable for concealed feeders. The principal forms were grey, dull green, black with white lateral stripe, and black with yellow lateral stripe. The larva was very common in Hants in July, and in Gloucestershire large numbers were still feeding during the first week in September; many quite small (possibly a second brood). The larvæ of *P. cardui* were found in some numbers in the western suburbs; but on the Hants coast almost every thistle bore indications that larvæ of *P. cardui* had been feeding. On the other hand, I did not find any larvæ of *Vanessa io*, nor do the imagines of this species and those of *V. polychloros* appear to have been commoner than usual.—A. T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

*Pyrameis atalanta* was not common at Ramsgate during September, but *P. cardui* and *Vanessa io* were in abundance.—A. T. MITCHELL; 5, Clayton Terrace, Gunnersbury, Nov. 5, 1892.

During the month of July the larvæ of *Vanessa atalanta* were very numerous, and we cleared out all we could find in some lanes near here. The imagines duly emerged throughout August, and I did not expect there would be another brood of them; but in September, in the same locality, we again saw signs of the larvæ, and in the course of that month we found a large number (more, even, than in July) in all stages of growth, from a few days old to full-fed, and often on the same plant. These pupated in due course, and the perfect insects emerged during October and the early part of the present month. On the 3rd inst. I discovered in the same lanes a half-fed larva of this species, and took two more yesterday and another to-day; the three latter were nearly full-fed, and I hope to get all four through this year. This surely points to two, if not three, broods this year. As to the white spot question, I do not think it has anything to do with sex. I have bred several in which the spot on one side was much fainter than that on the other, and one had only *one* spot, on the left wing; but, unfortunately, I was examining a great number at the time, and must have put it among those to be released, as I have not been able to find it since. I think the spot is nearly always present (more or less distinctly) on the *under side*, even when there is no trace of it above. Out of the hundreds reared I did not get any vars. save shades of colour.—E. SABINE; The Villas, Erith, Nov. 10, 1892.

VANESSA C-ALBUM IN NORTH STAFFORDSHIRE.—Although a North Staffordshire *edusa* has not favoured me with a visit, notwithstanding that I have kept a good look out for it, I have had the luck to see and take what, in this North Staffordshire district, is a scarcer butterfly. On September 26th, in our own garden at Madeley Vicarage, on a white aster, I observed a *V. c-album* settled, and sending into the house for a net, one of my sons soon came and captured the insect. It proved to be a male speci-



men, darkly marked, and in perfect condition. This is only the third time that I have seen this butterfly in North Staffordshire, and I have only heard of two or three other specimens being taken in the last twenty-five years. I fancy this is one of those insects that is unfortunately on the decrease in this country.—(Rev.) THOS. W. DALTRY; Madeley Vicarage, Staffordshire.

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## FURTHER DETAILS OF THE COLIAS INVASION.

A male *C. edusa* was taken in a turnip field near Wigtown on Sept. 22nd. At the same time and place a female was seen, but not captured. Another specimen was taken at Tarbert, Loch Fyne. Six males (besides several more seen) were taken at Kilmorie, in south of Arran, and another on the west coast of the island.—J. A. MACKONCHIE; The Hirsell, Coldstream.

I see that *C. edusa* has been reported as captured or seen in several places in Scotland; but the most important capture of this rather rare visitor to the North has not been noticed in the 'Entomologist.' An Edinburgh collector, Mr. Geikie, who was staying near to me in the South of Arran, took six specimens of *edusa*, and saw others, in September. This was made known by a letter to the 'Scotsman,' and the report elicited the information that *edusa* had also turned up at Tarbert (Loch Fyne), and in Wigtonshire. This is not the first time that *edusa* has been found in Arran; and I fancy that, whenever its "year" comes round, those who look carefully for it, in the beautiful island, will not be disappointed.—(Rev.) A. B. WATSON; 10, London Street, Edinburgh.

*C. edusa* has been very common at Broadstairs, Kent, this year. My brother and I were there for a fortnight from Aug. 17th, during which time we caught about seventy *C. edusa*, two var. *helice*, and thirty-three *C. hyale*. The weather was very wet and windy; in fact, we had only about three good days for collecting; if it had been better we could probably have caught many more *C. hyale*, as we saw about twice as many as we caught. *C. edusa* var. *helice* was rare; we only saw the two we captured. For about the first week *C. hyale* was scarce and much battered; but the second week there were a great many more, and nearly all in good condition. I have also seen a few *C. edusa* round Acton this year, and in July I caught two on Wormwood Scrubs. The only time I have seen *C. edusa* before was in August, 1885, in which year I saw three at Broadstairs.—H. J. DIXON; 7, Leamington Park Villas, Acton, W., Nov. 3, 1892.

During September *C. edusa* occurred commonly near Ramsgate, but specimens in good order were hard to find. Three worn *C. hyale* were netted, and two others missed.—A. T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

On the 5th of June last I succeeded in capturing a beautiful specimen of *C. hyale* in a lane near Maldon, Essex, flying in company with *C. edusa*. I have just been asked by an eminent entomologist to record this, as the date of capture may prove of interest.—T. M. SEESDALE; 6, Frederick's Place, Old Jewry, E.C., Nov. 8, 1892.

My first captures, since 1877, of that capricious species, *C. edusa*, were on July 26th, near Milton (Hants); but, owing to the extremely rough

nature of the ground, I was only able to secure twelve specimens,—six males and six females, including one example of var. *helice* and one intermediate form. I considered the specimens taken small, and on comparison I find that they are undersized. *C. edusa* has not been uncommon in the neighbourhood of Willesden and Ealing; I know of over twenty captures (all males). At Chiswick three specimens were observed. Whilst staying a few days at Evenlode (Worcester) two males were seen, and one captured, in a locality where they swarmed in 1877. When beating near Esher, I noted a very good male as late as Sept. 28th. This species appears to have occurred very commonly on the S.E. and S. coasts, but does not seem to have been nearly so common in inland localities as in 1877.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

### CAPTURES AND FIELD REPORTS.

SPHINX CONVULVULI IN HANTS.—I captured six specimens of this beautiful moth in my garden, hovering over the blossoms of *Nicotiana affinis*, from Sept 17th to 24th. I fear it was getting over before I observed it.—E. G. MEEK; Fairmead, Brockenhurst, Hants.

CAPTURES AT IVY BLOSSOM.—During the early part of October insects were fairly plentiful at ivy in this neighbourhood. In company with a friend, I was only able to give three nights to it; but we took several species, mostly in very good condition. *Orthosia macilenta* and *Xanthia circellaris* were very abundant. *Orthosia lota*, *Anchocelis pistacina* (including some very variable forms), and *A. litura*, also turned up in fair numbers, together with *Cerastis vaccinii*, *Scopelosoma satellitia*, *Agrotis segetum*, and *Phlogophora meticulosa*. We took single specimens of *Hadena protea*, *Xanthia fulvago* (*cerago*), and *Plusia gamma*. The only species out of the common run which we met with was *Xanthia aurago*, of which we took three on the first night; we were evidently rather late for it, as those we took were slightly worn.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath, Nov. 21, 1892.

SUGAR IN NOVEMBER.—The evenings of the 3rd and 5th of November last being very mild, I tried sugar, more as an experiment than with any hope of success. I was much surprised at the result. On the evening of the 3rd numbers came to sugar; but on the 5th, although raining hard, the insects simply swarmed. I counted over sixty on one patch of sugar. The insects I saw were *Cerastis vaccinii*, *C. spadicea*, *Agrotis suffusa* (worn), *Calocampa exoleta*, and *Oporabia dilutata*.—R. A. DALLAS BEECHING; Tunbridge Wells.

ENNOMOS AUTUMNARIA AT RAMSGATE.—A female example of this species was taken in September, and a considerable number of apparently fertile ova have been obtained.—A. T. MITCHELL; 5, Clayton Terrace, Gunnersbury, Nov. 5, 1892.

APAMEA OPHIOGRAMMA AT READING.—I have the pleasure to record the capture here, this season, of *A. ophiogramma*. It is, I believe, the first time it has been taken in this district.—W. E. BUTLER; Hayling House, Oxford Road, Reading.

BUTTERFLIES OF THE EASTBOURNE DISTRICT. — The following is a list of butterflies captured or seen in the neighbourhood of Eastbourne: — *Pieris brassicae* and *P. rapæ*, very abundant. *P. napi*, scarcer than usual. *Euchloë cardamines*, abundant; the females emerged very late. *Colias edusa*, common; var. *helice*, sparingly. *C. hyale*, one specimen in June. *Gonepteryx rhamni*, scarcer than last year. *Argynnis paphia*, common. *A. aglaia*, swarmed on some parts of the Downs. *A. latona*, one specimen shown to my brother at Polegate Railway Station, caught the same day, at Horsham, in a clover-field. *A. selene* and *A. euphrosyne*, abundant. *Melitæa aurinia*, one captured at Abbot's Wood; I also saw several more captured. *M. athalia*, abundant at Abbot's Wood. *Vanessa urticae*, common. *V. io*, very scarce; I have only seen two. *V. atalanta* and *V. cardui*, abundant. *Limenitis sibylla*, none captured, but several seen. *Apatura iris*, common at Abbot's Wood; would not come to carrion; several times I saw them settled on a path, after rain, imbibing moisture, but they were wary and I did not capture any; my brother saw two larvæ, beaten from aspen. *Arge galatea*, abundant, but local, at Abbot's Wood. *Satyrus megæra*, common. *S. semele*, extremely abundant at Beachy Head. *S. ianira*, abundant. *S. tithonus*, rather scarce. *S. hyperanthus*, abundant. *Cænonympha pamphilus*, abundant. *Thecla rubi*, first brood common, second brood very scarce. *T. quercus*, abundant. *Polyommatus phlæas*, common. *Lycæna agestis*, common. *L. adonis*, one specimen. *L. alexis*, abundant. *L. alsus*, very abundant, but extremely local. *L. corydon*, abundant; the commonest of all butterflies here from July to September, on Downs. *Syrichthus malvæ*, common. *Thanaos tages*, abundant. *Hesperia sylvanus*, abundant. *H. linea*, abundant at Abbot's Wood. In June my two brothers and an entomologist from Brighton distinctly saw a *Papilio podalirius* at Robbin Post Lane, Abbot's Wood. — F. BROMLEY; Bineham, St. Leonard's Road, Eastbourne, Oct. 6, 1892.

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## NOTES AND OBSERVATIONS.

A SUGGESTION FOR RECORDING.—It has occurred to me that much useful information might be accumulated if those entomologists who reside in the country, and are able to make observations day by day, would keep a record of the dates when first and last specimens of any insects occurred in their districts during the year. Additional interest would be given to such records if the time was also entered when each species appeared in greatest force. It would also add considerably to the scientific value of any records of this kind if meteorological data were incorporated. The greatest accuracy would perhaps be arrived at if the recorder only entered the result of his own observations, but there would be no objection to his obtaining information from fellow-workers in his own district. Of course dates of first and last appearances should be, as far as possible, absolute, and not dependent on the fact that the recorder had not been able to carry on observations previous to the day on which he saw his first specimens or after that on which he saw his last. When such a course is practicable the specimens to be recorded should always be captured and examined, so that the species may be properly determined and its sex ascertained. If any reader of this note should feel disposed to co-operate, I shall be glad to hear from



him. Is it too much to hope that at least one entomologist in each county will respond?—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

NOTODONTA DROMEDARIUS ON HAZEL.—*Re* Mr. Gervase F. Mathews' remark on hazel being an unusual food-plant(?) for *N. dromedarius* (Entom. xxv. 321), Dr. Ernst Hofmann, in his new work on European lepidopterous larvæ (part x. p. 67), now publishing in parts (Stuttgart, 1890-92), says, "It lives in two broods, in July and September, on birch, alder, and hazel."—F. BROMILOW; Nice, France, Dec. 9, 1892.

OCNERIA DISPAR.—About 1840 this species was abundant in England. The late Mr. Henry Doubleday sent me a large number of specimens, and I have forty-five of these in my collection at the present time. These old specimens are quite one-third larger than the examples now bred in confinement, and the females have scarcely any markings. I have also fourteen male specimens, bred by a collector at Darlington, which are very similar to ordinary females in coloration.—J. B. HODKINSON; Ashton-on-Ribble.

"APPLE-TREES AND WINGLESS MOTHS."—Those who can refer to the 'Standard' for October 19th, 22nd, and 25th, will find a curious and interesting correspondence under this head. The two chief points brought out are:—(1) A ring of cart-grease should be frequently applied round the trunk to prevent the apterous females getting to the branches; but the grease should be put "on bands of specially prepared grease-proof paper tied tightly round the trunks," or the tree will be injured. (2) "All fruit-growers know that a small percentage of female moths *will always be carried up by the males*." (The italics are mine.) Point No. 1, of course, is beyond dispute. Can the same be said of No. 2?—J. ARKLE; Chester.

[The following extract from a letter in the 'Standard' of October 19th, 1892, is possibly what our correspondent refers to:—"I am informed by a most experienced gardener and keen observer of insect pests that this ring is of no use at all. That the female moth is wingless he admits, but the male moth is provided with enough wing to carry two, and, as a fact, by the aid of a lantern, he has observed the male moth hold the female moth and fly up into the tree bearing her with him, an effectual way of passing the cart-grease ring.—A. B. MORLING; Ross, Herefordshire, Oct. 18."]

UNUSUAL SITUATION OF THE PUPA OF *SPILOSOMA LUBRICIPEDA*.—In the autumn of 1891 my children told me that they had found a lot of "ermine" cocoons in a blanket. Fortunately they had not disturbed them, and I was therefore able to note the following particulars. The blanket in question is one of the ordinary brown description, and is used during the winter months for covering over some rabbit-hutches, and had lain throughout the summer, folded up, on top of the hutches, at a height of about eight feet from the ground, in an open shed under a corrugated iron roof, which effectually sheltered it from the rain. On going to look, there I found, sure enough, some score of cocoons of a *Spilosoma*, neatly packed between the folds of the blanket, and assimilating so closely with it in colour as to be hardly noticeable. These I carefully removed to a breeding-cage, and in due course they produced some fine specimens of *Spilosoma lubricipeda*. On examining the same blanket this autumn, after its summer rest in the same position, we again found it similarly tenanted. I am aware that the larvæ of this species are wanderers, often ascending to a consider-

able elevation in quest of food, and have found them on a "Virginia creeper" some twenty feet from the ground, but they appeared to descend to, and for some time travel about upon, the earth previous to pupation; and I can only account for the cocoons being placed in the situation where we found them by reason of the protection afforded to the insect, during its quiescent stage, by the close assimilation of the cocoons to their surroundings.—ROBT. ADKIN; Lewisham, November, 1892.

"ASSEMBLING" IN LEPIDOPTERA.—I have been rather surprised, in the notes which have appeared on this subject, that *Odonestis potatoaria* has not been mentioned. It is, I have found, very easily "assembled;" *Callimorpha dominula*, I believe, also. A season or two past on one occasion in South Wales, having captured a rather dilapidated specimen, I found myself suddenly in company with some half dozen others. It was a very windy day, so that the insects had difficulty in flying, and did not again approach after once being frightened, and therefore I was unable to certify they were attracted by the specimen in my net, which I concluded must be a female.—T. B. JEFFERYS; Clevedon.

TWO MORE CASES OF "ASSEMBLING."—In an outhouse, where I have been in the habit of keeping a number of breeding-cages of one sort and another, *Endrosis fenestrella* has been of far too common occurrence during the past summer. Among the other receptacles in this outhouse stood four flower-pots, each covered with leno, and containing seed-heads of *Silene*, in which *Dianthæia* larvæ had fed-up during the previous autumn. Three of them I knew contained pupæ, but in the fourth I had been able to trace neither larvæ nor pupæ, and therefore concluded that it was devoid of any great attraction, in this respect, for the *Endrosis*. On visiting my cages just before dusk one evening at the end of June, I noticed some three or four *fenestrella* fluttering about on the top of the leno that covered the last-named flower-pot. I was annoyed at seeing so many at one time, and having killed them went away, and thought no more about it; but having occasion to go into the outhouse again later in the evening, I was surprised to find no less than seven of the little pests, all fluttering about in a great state of excitement, on the covering of the same pot. I at once concluded that there must be some cause of attraction at the particular spot where they were assembled, and upon removing the leno I found a fine freshly-emerged female *fenestrella*, sitting just beneath it on the inside of the flower-pot. Evidently this was the cause, and the individuals found on the outside were males attracted by it; having removed it I found the cover of this pot, on two subsequent visits, quite free of *fenestrella*, as the other three had been during the whole of the evening. Earlier in the spring I reared a considerable number of *Biston hirtaria* in a large zinc-covered cage standing in the open, and on several occasions, when freshly-emerged females were left in it over night, one or more males were found resting on the outside of the cage in the morning, the largest number found at one time being three. The species did not appear to be common in this neighbourhood; indeed, the only wild examples that I came across were those that rested on the cage.—ROBT. ADKIN; Lewisham, November, 1892.

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ERRATUM.—Entom. xxv. p. 226, line 16 from bottom, for *seventeen* read *seven*.



## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — December 7, 1892. — Mr. Frederick Ducane Godman, M.A., F.R.S., President, in the chair. The President announced the death, on the 2nd December, of Mr. Henry T. Stainton, F.R.S., an ex-President of the Society. A vote of condolence with Mrs. Stainton was passed by the Meeting. Mr. Frank Bouskell, of 11, Lansdowne Road, Stoneygate, Leicester; Mr. George C. Dennis, of Tower Street, York; Mr. Charles B. Headley, of Stoneygate Road, Leicester; Mr. William Mansbridge, of Luther Place, Horsforth, near Leeds; and the Rev. George W. Taylor, of St. Barnabas, Victoria, British Columbia, were elected Fellows of the Society. Mr. Jenner Weir exhibited a species of *Acræa* from Sierra Leone, which Mr. Roland Trimen, who had examined the specimen, considered to be a remarkable variety of *Telchinia encendon*, Linn. It was a very close mimic of *Limnas alcippus*, the usual West African form of *Limnas chrysippus*. The upper wings of the specimen were rufous and the lower white, as in the model, and the resemblance in other respects was heightened by the almost total suppression of the black spots in the disc of the upper wings, characteristic of the usual markings of *T. encendon*. Mr. F. J. Hanbury exhibited a remarkable variety of *Lycæna adonis*, caught in Kent this year, with only one large spot on the under side of each upper wing, and the spots on the lower wings entirely replaced by suffused white patches. He also exhibited two specimens of *Noctua xanthographa* of a remarkably pale brownish grey colour, approaching a dirty white, obtained in Essex in 1891; and a variety of *Acronycta rumicis*, also taken in Essex, with a beautiful dark hind margin to the fore wings. Mr. H. J. Elwes exhibited a living specimen of a species of *Conocephalus*, a genus of Locustidæ, several species of which, Mr. C. O. Waterhouse and Mr. McLachlan stated, had been found alive in hothouses in this country. Dr. T. A. Chapman exhibited immature specimens of *Tæniocampa gracilis*, *T. gothica*, *T. populeti*, *T. munda*, *T. instabilis*, and *T. leucographa*, which had been taken out of their cocoons in the autumn, with the object of showing the then state of development of the imago. Mr. F. W. Frohawk exhibited a living specimen of the larva of *Carterocephalus palamon* (*Hesperia paniscus*), hibernating on a species of grass which he believed to be *Bromus asper*. The Rev. Canon Fowler and Mr. H. Goss expressed their interest at seeing the larva of this local species, the imago of which they had respectively collected in certain woods in Lincolnshire and Northamptonshire. Mr. Goss stated that the food-plants of the species were supposed to be *Plantago major* and *Cynosurus cristatus*, but that the larva might possibly feed on *Bromus asper*. Mr. C. G. Barrett exhibited a long series of remarkable melanic and other varieties of *Boarmia repandata*, bred by Mr. A. E. Hall from larvæ collected near Sheffield. Mr. W. Farren exhibited, and commented on, four varieties of *Papilio machaon* from Wicken Fen; also a series of two or three species of *Nepticulæ* pinned on pith with the "minutien Nadeln," for the purpose of showing these pins. Canon Fowler exhibited specimens of *Xyleborus perforans*, Woll., which had been devastating the sugar-canes in the West Indies. Mr. C. O. Waterhouse stated that the larvæ had done great damage to beer-casks in India. Mr. E. B. Poulton showed, by means of the oxy-hydrogen lantern, a number of slides of various larvæ and pupæ,



in illustration of his paper, read at the October meeting, entitled "Further experiments upon the colour-relation between certain lepidopterous larvæ and their surroundings." He stated that he believed that nineteen out of twenty larvæ of Geometridæ possessed the power of colour adjustment. Mr. F. Merrifield, the Rev. J. Seymour St. John, and Mr. Jacoby, took part in the discussion which ensued. Mr. F. Merrifield read a paper entitled "The effects of temperature on the colouring of *Pieris napi*, *Vanessa atalanta*, *Chrysophanus phlæas*, and *Ephyra punctaria*," and exhibited many specimens thus affected. In the cases of *P. napi*, *C. phlæas*, and *E. punctaria*, he remarked that they corresponded with natural variations of these species in regions or seasons associated with similar temperatures; and some curious effects produced by severe temperatures on *V. atalanta* seemed likely to throw light on the evolution of the complex markings of the *Vanessas*. Mr. Poulton, Dr. F. A. Dixey, Mr. Elwes, Mr. Jenner Weir, Mr. Tutt, and Mr. Frohawk took part in the discussion which ensued. Mr. Kenneth J. Morton communicated a paper entitled "Notes on Hydroptilidæ belonging to the European Fauna, with descriptions of new species." Mr. McLachlan made some remarks on the subject of this paper. Dr. T. A. Chapman read a paper entitled "On some neglected points in the structure of the pupa of Heterocerous Lepidoptera, and their probable value in classification; with some associated observations on larval prolegs." Mr. Poulton, Mr. Tutt, Mr. Hampson, and Mr. Gahan took part in the discussion which ensued. Mr. J. Cosmo Melvill communicated a paper entitled "Description of a new species of Butterfly of the genus *Calinaga*, from Siam." Mr. W. L. Distant communicated a paper entitled "Descriptions of new genera and species of Neotropical *Rhynchota*." —H. GOSS and W. W. FOWLER, *Hon. Secretaries*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*December 12th, 1892*.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. J. Lea, Canning Street, was elected a member of the Society. The President referred to the death of the veteran entomologist, Mr. H. T. Stainton, and remarked that no one had done more to encourage the study of Entomology. Messrs. G. A. Harker and H. B. Jones gave a paper entitled "Notes on a fortnight's collecting in Galway," the principal insects taken being *Zygæna minos*, *Miana captiuncula*, two specimens of the rare *Triphæna subsequa* and *Rhodaria sanguinalis*, and exhibited specimens of, and pointed out differences between, English and Irish forms. The *Miana captiuncula* were especially interesting, being much more strongly marked than the English forms, the female having two entire cream-coloured fasciæ; *Lycæna icarus*, very bright females, with large and brilliant red spots. The President exhibited large Irish *Vanessa urticae*. Mr. Gregson, a remarkably fine specimen of *Prodelia testaceoides*, Gn.,\* bred by George Rose from a larva taken in a market at Barusley. Mr. Stott (on behalf of Mr. H. S. Clarke), *Sphinx convolvuli* from the Isle of Man, and some fine varieties of *Smerinthus tiliæ*. Mr. Pierce, a specimen of *Ceratocampa regalis*. Mr. J. Herbert Stott, *Sirex gigas* from a North Staffordshire coal mine.—F. N. PIERCE, *Hon. Sec.*

\* ? *Prodenia littoralis*.

## OBITUARY.

HENRY TIBBATS STANTON died at Lewisham on the 2nd December, 1892, aged seventy years. For more than forty-seven years Mr. Stainton has been a contributor to the literature of Entomology; and, within the limits of this notice, it is impossible to do justice to the great scientific value of all his work. He had essentially the mind of a true scientist, industrious, exact, most scrupulous in publishing nothing he was not prepared to support by the strictest rules of evidence; it is most remarkable that scarcely anything he ever wrote has been controverted; dealing as he did with no speculative views, he was singularly freed from the necessity of dissipating his energies in mere wordy contests. He could never have accomplished all that he did had it not been for his methodical economy of time. He often had to visit the city, and on those occasions usually returned at the time most others arrived; and about 11 or even 10 a.m. he might constantly be seen at the Cannon Street Station leaving London for Lewisham. If he made a scientific tour on the Continent, the whole journey was planned out, and he would invite his friends to meet him at the hotel he proposed to visit, fixing the date and hour of meeting at far-off German cities. He was always most careful to perform all that he had promised; and it is well known that when he once was unexpectedly called upon to support a friend politically, he travelled from a distant part of Europe simply to record his vote, leaving England immediately afterwards. In the year 1845 Mr. Stainton began to publish communications to the 'Zoologist'; and for many years afterwards some of the more important notes in that periodical were from his pen. In 1855 he established, and enriched by his own writings, 'The Entomologist's Annual,' which he continued to publish for twenty years. In 1864 he was one of the founders of 'The Entomologist's Monthly Magazine,' our valuable contemporary. In 1857-9 Mr. Stainton brought out 'A Manual of British Butterflies and Moths,' a perfect model of accurate condensation, making the work a useful compendium, which for the need it then supplied, and still supplies, has no equal. Mr. Stainton's classical work is the 'Natural History of the Tineina,' in four languages, of which more than a dozen volumes have been published. In this he was assisted by eminent continental naturalists. The work is finely illustrated, and will be referred to as long as the science of Entomology is studied. But Mr. Stainton's activities did not end here. So anxious was he to promote the well-being of Natural History that he was for several years secretary of the Ray Society; of the Zoological Record Association; of the Entomological Society, of which he was also an ex-president; and a member of the council of the Royal Society, to which he was elected a Fellow in 1867. Another excellent quality Mr. Stainton possessed,—he was always most ready to impart his vast stores of information to all who sought enlightenment. For many years he had monthly meetings at his house, to which all workers in entomological science were welcomed; and he also had at one time a class of students for observations in the field. Anyone who will turn to the works dealing with the Micro-Lepidoptera of the British Isles, published prior to Mr. Stainton's time, will be struck with the immense strides the knowledge of those interesting and beautiful insects has made, mainly through his exertions. It may truly be said of him that he lived highly esteemed, and died deeply regretted.

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PROFESSOR J. O. WESTWOOD.

JOHN OBADIAH WESTWOOD, Nestor of contemporary entomology, Hon. Life-President of the Entomological Society of London, and Professor of Zoology in the University of Oxford, died in that city on the 2nd of January last.

To write a full account of the work done in our science by the deceased during his long life, would almost entail a history of the progress of entomology during the last sixty years, for it can only be properly estimated by comparison with the contemporary advancement made in the knowledge of the insect world. Judged by that standard it will always be found to represent much of the best work of the day. Studying all orders of insects, describing many of the most striking and remarkable species, and illustrating the same with his ever facile pencil, his contributions from the years 1827 to 1891 comprise a small entomological library, and reflect the different phases in the entomology of those years.

Prof. Westwood was born at Sheffield on December 22nd, 1805, and had, therefore, just completed the eighty-seventh year of his life. He was originally intended to follow the profession of the law, and was actually at one time a partner in a solicitor's business, but happily for himself and the cause of entomology he was able to devote himself to more congenial studies. This was largely incidental to his friendship with the Rev. F. W. Hope, whose collection with his own were presented to the Oxford University Museum, concurrently with his appointment as Zoological Professor.

Of his published writings we can say nothing here that is unrelated to entomology, though his joint-authorship with Spence Bate, in the 'History of the British Sessile-eyed Crustacea,' and his very considerable and valuable contributions to Palæographic Art, are alone sufficient to perpetuate his memory. In entomology his best and most enduring work is,



doubtless, the two volumes devoted to the 'Modern Classification of Insects,' a publication which, appearing more than fifty years ago, still maintains its ground in the face of other and more recent compilations; and this is the real test of scientific reputation as compared with popular notoriety. Of the beautifully illustrated books he delighted to produce, the 'Arcana Entomologica' and 'Cabinet of Oriental Entomology' are sufficient examples. These were published in a day when descriptive entomology and monographic revision were practically in their infancy, and they would almost be impossible now in an age of greater specialism. *Facile princeps* an authority on economic entomology his many contributions to the 'Gardeners' Chronicle' sufficiently testify. In many Orders he will be remembered by the attention paid to particular Families, as the "Paussidæ" in Coleoptera, the Orthopterous "Mantidæ" and the "Uraniidæ" and genus *Castnia* in Heterocerous Lepidoptera. In Rhynchota he described the Heteroptera contained in the Hope collection, and monographed the "Fulgoridæ"; whilst in Diptera he described many species and contributed much information. Last, and certainly not least, was the assistance he always gladly gave to correspondents. The writer is under several such obligations, and has even received coloured drawings of obscure species.

In private life Prof. Westwood was particularly respected, and all who enjoyed his hospitality at Oxford will remember not only the good cheer and the quaint adages on the walls, but also an original and charming personality. This long life came to a peaceful close through the effects of old age and its attendant weakness, perhaps hastened at the very last by bronchitis. The Professor was even ignorant of a serious internal complaint, which his medical attendant not only knew would ultimately prove fatal, but might also necessitate a most painful operation. Preserving his faculties to the last, he read the notice of Mr. Stainton's death in the last number of the Entomological Monthly Magazine, and remarked that the next one would record the passing away of another old entomologist. This anticipation has been fulfilled.

Prof. Westwood was buried in St. Sepulchre's Cemetery, Oxford, and his body was followed to its last resting-place by all the principal men of the University then in residence.

W. L. D.

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# REMARKS ON VARIATION IN *VANESSA ATALANTA* AND *V. CARDUI*.

BY RICHARD SOUTH.



*VANESSA ATALANTA*, ab.

IN the above exceedingly interesting aberration of *Vanessa atalanta* the scarlet band of fore wings does not extend beyond the subcostal nervure, and terminates, apparently, on the first median nervule; the continuation, however, of this band is represented by a small scarlet dash placed on the internal edge of a white spot in the submedian interspace; there is a rather large white spot on the scarlet band in the first median interspace, and two elongate white patches immediately above it; the abbreviated white band from costa, so conspicuous in typical *atalanta*, is completely eliminated. The black spots in the scarlet border of hind wings are entirely absent on the left wing, and only faintly indicated on the right wing. On the under surface of the fore wings the scarlet band is broader, but does not extend further in either direction than above; the white spot in first median interspace is placed on the inner edge of a diffuse pale grey patch, and there is a similar patch below it. The hind wings are less finely mottled than in the type; the whitish blotch on costa is represented by a C-like mark; the subanal ocellus is distinct, and the marginal line is rather broad, interrupted by the nervules, and very black.

Mr. E. Howis Marston, who has most obligingly entrusted me with the specimen to figure, informs me that it was taken in Jersey last August by Mr. H. Burg, a member of the Oxenford House School at St. Lawrence, in the immediate neighbourhood of the school. He adds that *Vanessa atalanta* was abundant, and the specimens very fine, in Jersey last year.

A somewhat similar aberration of this species is figured in the 'Entomologist' for 1878 (xi. pl. II.), but that specimen, which was bred in 1867 by Mr. W. Smith, of Birmingham, from a larva found at Ashton, differs from the present one in having the scarlet band of the fore wings suffused with yellowish, and a

large bluish patch, interrupted by the nervules, on the under surface of these wings, occupying the position of the usual short white band from costa.

In many respects this form of *V. atalanta* is analogous to *V. cardui* var. *elymi*, Rambur, of which slightly modified examples have been observed in England, and one of these is figured, Entom. xiii. 73. Rambur's variety of *V. cardui*, as figured by Honrath (Berl. Ent. Zeit. xxxii. pl. vii. fig. 3), has the fore wings black; the tawny colour forms a patch in discoidal cell, almost bisected by an encroachment of the black from above, and a patch in the submedian and each median interspace, decreasing in size upwards; on the apical area there is a series of five elongate white spots, and a similar shaped pale spot in each interspace below, forming with the apical ones a transverse series of spots. Hind wings tawny; venation black, widening out on hind marginal area; the basal half of costal area is black, and there are some internervular white streaks becoming fainter towards abdominal margin.

A transverse series of white or whitish spots on the submarginal area and absence of white markings about the middle of costal area of primaries are characters common to *V. cardui* var. *elymi* and the variety of *V. atalanta* here figured. In otherwise typical specimens of both species an extra white spot in first median interspace is found, and modification of the other white markings is also exhibited.

*V. cardui* would appear to have a greater range of variation than has yet been observed in *V. atalanta*, as, in addition to aberration in the markings of fore wings already adverted to, there is considerable variation in the pattern of hind wings; thus we find that some examples have the black transverse markings very broad and intensely black, sometimes they are only faintly interrupted, but in a few examples completely obliterated; the black spots of central series are sometimes almost united with those of the submarginal series, in other examples the central spots are pupilled with blue, as in var. *kershawi*; and in others, again, both series are entirely absent, as in var. *elymi*.

Var. *kershawi*, McCoy, differs from typical *V. cardui* only in its darker colour on both surfaces, and in the size of the blue pupils on the ocelli of hind wings. This form was originally described as a distinct species peculiar to Australia, but the same aberration occurs in Europe, and has been found in England. A figure of this form will be found, Entom. vi. p. 345, and Newman's Brit. Butt. p. 64.

At a meeting of the South Lond. Ent. and Nat. Hist. Soc., held 25th November, 1892, Mr. Jenner Weir exhibited specimens of *Pyrameis (Vanessa) cardui*, which he had received from Larimer County, Colorado, captured at an elevation of upwards of 7000



feet. "These, if they had been Australian, would have been undoubtedly deemed to be *Pyrameis kershawii*, the blue pupils to the three inner ocelli of the upper side of the lower wings being even more strongly marked than in that subspecies. A pair of the true *P. kershawii* were shown for comparison, and also because one of them showed the small white spot between the 1st and 2nd nervule of the upper wings, which was sometimes found also in *P. atalanta*, and was normal in *P. huntera*. Thus these three species were linked together by a very insignificant dot, always present in one species, and occasionally appearing in the other three."

In the above remarks, colour aberrations have not been specially referred to, because, in the majority of cases, these can only be regarded as abnormalities.

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## VARIATION OF LEPIDOPTERA AT RINGWOOD. 1891-92.

By J. HENRY FOWLER.

PROBABLY it may be interesting to note the variation observed in some species of Lepidoptera taken in this district during the past two seasons.

I will refer to the Rhopalocera only at present, having plenty of material to work upon in this division.

*Gonepteryx rhamni*. This species has a form of the female quite intermediate in colour between its typical form and that of the male: it is very much yellower than the type, occurs annually, so I think may be considered more than an aberration; one specimen is the largest of any in my series. Some males have a whitish bloom over all the wings.

*Colias edusa*. The males vary much in the borders and ground colour of the fore wings. Borders (1) black, nervules yellow from the costa to anal angle; (2) quite black; (3) faded, satiny-brown, not irrorated with yellow scales, but from the costa—along the border internally, for some distance—capped with deep black; (4) very dark, with three or four yellow nervules towards the tip, slightly irrorated; some have the border continued quite half-way along the inner margin of fore wings. Ground colour: in some examples this is deep orange; a few very pale, almost yellow. I have arranged a series of each, and the difference is striking; many have the upper surface of the hind wings beautifully shot with purple; a few have the spots on under surface of the hind wings enlarged, and with the brown circles elongated and pointing towards the anal angle. I took a male which is as large as any of the females—a perfect giant.

The females vary in colour, similar to the males: this sex differs mostly in the width of borders, and area of the yellow

spots therein; as a rule, when the border is broad the spots are small, and *vice versâ*. All the spring females which I observed had the yellow much more developed than those taken later. I only took three of this description; all the others are mean in comparison; a few are almost spotless. This species has been about the commonest butterfly here this season, but I did not see a single example of var. *helice*. It undoubtedly in its migration followed the course of the River Avon, being common along the banks and meadows in the spring. In August it was quite a treat to see such numbers; they were only active when the sun shone brightly; the meadows were its head-quarters.

*Pieris rapæ*. Males, upper surface pure white; some females suffused with brown.

*P. napi*. Several females, very dark, the central black spots and tips much enlarged; one with the former almost united, and several with an additional spot upon the hind wings, between the fourth and fifth nervule from the inner margin; the two broods are most distinct here.

*Euchloë cardamines*. Males with a fine black spot in the centre of the hind wings (several).

*Satyrus egeria*. Varies considerably in both sexes; the spring form of male has the spots enlarged and brown. A fine specimen, with extra central markings, forming an interrupted broad band from the tip to the hind margin similar to *megæra*; another with the four spots surrounding the eye much reduced, all the others nearly obsolete; the row of eye-spots upon the hind wings reduced to white dots very slightly surrounded with black: this form approaches the var. *arete* of *hyperanthus*. Some have the ground all brown; one has a greasy appearance, and looks as if it had been soaked in oil. Many females have an extra spot between the two near the anal angle and that above; others, though rare, have two inside the anal ones, which are generally suffused (these nearly correspond with the male described above like *megæra*).

*Satyrus megæra*. A female, with the transverse lines upon the upper wings filled in with dark brown, forming a broad band; the tip has the large black spot which is double-eyed, above it another single eye-spot, and below these a small dot, otherwise typical.

*Hipparchia semele*. A male, plain sooty-brown all over upper surface. This species varies mostly on the under side; a nice example has a broad white band nearly through the inferiors. These bands range from white to many rich shades of brown.

*Epinephele ianira*. Females with double eye-spots; one, with same, broadly surrounded with yellow, lower portion fulvous.

*E. tithonus*. Very variable. Several males with blind ocelli; one, a little gem, has the bar continued to the costa, and into the base, hind wings dark, with small central fulvous spots. Several

of each sex have one extra dot, or sometimes two dots, inside the hind margin. A female has the middle one on under surface centred with white; others are very pale, almost yellow, upon the upper surface.

*E. hyperanthus*. Several of the var. *arete*, both sexes. Females with spots upon the fore wings, surrounded with yellow; one or two have lanceolated spots underneath; several bleached; sometimes the ground is very dark upon the hind wings.

*Cænonympha pamphilus*. A male, with the spots near tip much enlarged, some obsolete, others ringed with yellow; a male with hind wings dark brown, with small central spaces; a very large female which approaches *davus*, ground quite reddish, spots near tip surrounded with paler, hind wings each contain three large black spots near outer margin (this specimen is totally different to many others I have with similar spots); two males with double elongated eye-spots upon hind wings; the ground colour varies much.

*Vanessa cardui*. Varies mostly in the red markings. Some are light red only; a few brick-red; others extremely pale, the beautiful pink ones being scarce. I have some in which the dark ground predominates, and with the row of spots upon the hind wings nearly banded throughout; some have the spots finely centred with blue.

*V. atalanta*. One very beautiful; upon the hind wings, *inside* the scarlet band, the obscure black lunules are each centred with blue, most noticeable and uncommon; several with the spots running through the band blue centred also.

The larvæ of the last two species have been very abundant this season. I had no difficulty in finding several hundreds of each. *V. cardui* I took upon mallow, three kinds of thistles, also stinging-nettles; but neither species were seen commonly upon the wing in the autumn.

*V. io*, with the yellow replaced by white, occurs annually in the Forest.

*Argynnis euphrosyne*. Males very pale, almost yellow, the border spots absent, replaced by fine black lines; a fine one with central spots much enlarged and banded; another has the central row of spots upon hind wings confluent with the margin, the latter broad and containing another row of fulvous spots, under surface with central area yellow, a pearly streak in the middle, with a border of closely-set white spots, inside of which is a band of brick-red, the black spots reduced to minute rings filled in with yellow (this specimen looks unlike *euphrosyne*).

*A. selene*. About the most variable butterfly here. Several with the dark markings much enlarged, and with all the margins broadly banded; some, in addition, have all the wings irrorated with black scales, which gives them the appearance of being almost black. The females differ considerably in ground colour,



rarely two similar, some light, others very dark and reddish ; a pretty form has all the marginal spots yellow.

*A. paphia*. A male with the hind wings bronze-green ; a female quite blue, with usual silvery streaks.

Var. *valesina*. Varies in itself ; one suffused with blue scales ; another with nearly all the ground yellow. I bred a form which I have sought for in vain upon the wing ; it is shaded all over, and is an extreme specimen : altogether I have above twenty, but this one attracts attention at once ; several have the wings brownish, and are intermediate between the type and *valesina*.

*Polyommatus phlœas*, one of the var. *schmidtii* (Gerh.). Several approaching it ; two fine males, finely irrorated with black all over, the copper scarcely visible. (Meadows.)

*Lycæna ægon*. Males often have the margins broadly black, and with the nervules finely pencilled for some distance towards the base ; others reduced to marginal lines ; ground, three shades, very light blue ; dark and purplish ; a rarer form light and suffused with grey. The females are more constant ; the blue-marked ones do not occur here, and it is difficult to find specimens with the "silver studs" upon the hind wings, the spots being quite black. I have a female with a broad zigzag orange line upon all the margins.

*Pamphila thaumas*. I take a most interesting form every year ; the superior wings, from the base to the anal angle, right round to some distance into the costa, broadly suffused with dark greenish ground ; all the hind wings quite as dark as *actæon*. This form occurs in both sexes ; the small proportion of tawny shows up vividly ; under wings greenish ; the type is very light in comparison. (New Forest, amongst rushes.)

*Hesperia malvæ*. Several rich brown, one var. *taras* (Bergstr.). Several other species vary considerably, but the above are in many instances constant.

I have noticed, for some years past, that the butterflies of this district are much darker than from any other that I have ever collected in.

Ringwood, January, 1893.

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## REMOVAL OF GREASE FROM THE BODIES OF MOTHS.

By W. M. CHRISTY, F.E.S.

For several years past I have adopted Mr. Greene's method of treating greasy insects, and have operated on some hundreds of moths, large and small, from *Cossus ligniperda* down to *Lobophora sexalisata*. The plan I mean is described in the 'Insect Hunter's Companion,' p. 76, and it seems to me the only way of keeping a collection in good order with respect to "grease." My

object in the following remarks is to show that by a little modification of Mr. Greene's plan the process may be made comparatively simple, and need not interfere with ordinary collecting work to any considerable extent.

*Excavation.*—Mr. Greene says: "When the insect has been on the setting-board a sufficiently long time to render the contents of the body firm and viscid (not *hard* or *dry*), remove it." . . . "If the wings of the insect, when removed from the setting-board (in order to prepare the body), are not thoroughly dried or stiff, it must of course be replaced and reset. . . . Take a a pair of sharp fine-pointed scissors and cut from the under side of the body a small slip, *i. e.*, beginning at the extremity of the abdomen, on the *left-hand* side, cut up to the thorax; and having done the same with the right-hand side, remove the slip thus made. Care of course must be taken not to cut too deep. Take now a sharp pen-knife, and inserting the point at the thorax draw it gently down each side of the body. It will be found this can readily be done if the contents are not *hard*. The interior, when thus loosened, can easily be picked out with the point of the knife or a pin or needle. In very small insects, as *Eupithecia*, &c., instead of a knife a fine needle must be used, and great care and caution are necessary." Of course the insect should be held in your left hand, upside down, and with its tail pointing towards you; the head of the pin being between your left fore finger and thumb.

I never excavate anything smaller than, say, *Notodonta camelina* or *Luperina testacea*. Firstly, because I cannot; and, secondly, because I do not find it necessary. The benzine appears to soak all the grease out of small insects without the body being opened at all, and I am not at all sure that the benzine would not do so even with large insects, but I have never relied solely upon it. The body sometimes breaks off before the excavation is complete. When this happens you must be satisfied with what has been already done; you cannot hold the body so as to take any more out of it; you must leave it, and trust to the benzine.

*Break off the body.*—Before doing so, cut the junction of the abdomen and thorax underneath with a pair of scissors, or you may find that the hind wings come off with the abdomen.

*Pinning.*—Pass a very fine (No. 18 K. & B.) pin well through one side of the detached body, and push the body high up along the pin. You can then, by means of the pin, transfer the body about from one place to another without handling it, and the body need not come in contact with anything.

*Labelling.*—A paper label, with a number corresponding with a similar label on the insect, must be attached to the pin, so that you may know to which insect each body belongs. The numbers must be written on the labels with lead pencil; benzine would obliterate ink.

*Soaking.*—The bodies, whether excavated or not, must be

soaked in benzine collas. The most convenient bottle that I have tried is one holding 4 ozs., not more than 3 inches in height, and having a mouth fully  $1\frac{1}{2}$  inches wide. From this bottle the bodies can easily be removed, one by one, by means of a pair of forceps. The bodies should remain several days at least in the benzine; and if the benzine becomes much discoloured by the grease, it should be poured away, and a fresh supply put into the bottle before the bodies are removed. Large bodies or hardened ones, and those not excavated at all, should remain a week or a fortnight in the benzine.

*Drying*.—Lay the body on blotting-paper, *but only for a few seconds*, and then bury it immediately in powdered French chalk, and leave it there until next day. Then remove it from the chalk, and shake and blow off the powder from the scales. The same chalk may be used again and again.

*Mending*.—Pull the body off its pin as carefully as possible, and, holding it with a pair of *pin-pointed* forceps, attach it to its place on its own insect with some shellac, and steady the body in its proper position, by means of a pin or two, while the shellac is drying. Mr. Greene says, "If well done, the operation will escape the most critical eye"; and this is perfectly true.

Now if it were only possible to doctor an insect when it was at that particular state of partial dryness, which Mr. Greene considered so essential, it would often entail setting an insect twice over; or if the whole process, such as I have described, was obliged to be done straight away and at the same time, then it would often interfere most dreadfully with other collecting work, and for many people would be quite out of the question. But the process may be completed bit by bit. The insects need not be taken off the boards before they are thoroughly dry. The "greasers" may generally be put aside until a number have accumulated, and a convenient time for the operation presents itself. I often do them weeks after they have been killed, and I always keep many until the winter before attacking them. After excavating, pinning, and labelling, the bodies may be put aside for a time; they may be allowed to remain in the benzine, or buried in the chalk, as long as one likes. After drying, the bodies may be pinned beside their respective insects in the store-box, and be left there, to be stuck on during the winter evenings.

I think that by dividing up the process in this sort of way that time enough can be found by most collectors to doctor, at any rate, the good specimens of rare species that are known to be confirmed "greasers;" and that means the males of most Bombyces and many others. The females need not, as a rule, be doctored at all, except the Sesiidæ, Hepialidæ, and Cossidæ.

Watergate, Emsworth, Hants.



## THE DRAGONFLIES OF THE CHESTER DISTRICT.

By J. ARKLE.

SOME three or four years ago, in my entomological wanderings, it occurred to me, when a dragonfly crossed my path, that it might be interesting to give some attention to these extraordinary creatures, and ascertain, as far as I could, how many species were to be found in this district. The Chester Natural Science Society covers the northern half of Wales, as well as the county of Cheshire. In this district we have heaths and mosses, lakes and meres, rivers and streams,—all favoured haunts of the order *Odonata*.

If we turn to a list of British dragonflies—say, that of Mr. W. Harcourt Bath—we find ourselves among “nymphs,” true “dragonflies,” “emeralds” and “elfs,” “darts” and “sphinxes,” “demoiselles,” “sylphs,” and “fays.” Such are the quaint, mother-tongue names given to the weird and beautiful insects which are the subjects of this chapter. A closer study of the list shows an additional and more scientific nomenclature. First of all, we find there are forty-six species claimed as British. But so many of these rest on such slender claims that the author referred to, in his ‘Illustrated Handbook,’ p. 13, estimates the number of truly indigenous forms at no more than thirty-seven. Still keeping to our list, we find the forty-six species divided into two great sections—LIBELLULINA and AGRIONINA.

Section I. is subdivided into two tribes—LIBELLULINÆ and ÆSCHNINÆ. Tribe 1 is again divided into two families—LIBELLULIDÆ and CORDULIIDÆ. Then we get the LIBELLULIDÆ separated into genera—the *Leucorrhinia*, *Sympetrum* (nymphs), *Platetrum*, *Libellula*, and *Orthetrum* (dragonflies). The CORDULIIDÆ are a single genus, *Cordulia* (emeralds). Tribe 2 (ÆSCHNINÆ) is divided into the two families GOMPHIDÆ and ÆSCHNIDÆ. The GOMPHIDÆ are subdivided into the genera *Onychogomphus*, *Gomphus* (elfs); *Cordulegaster* (darts); the ÆSCHNIDÆ into *Anax*, *Brachytron*, and *Æschna*—all sphinxes.

Section II.—the AGRIONINA—comprises two families, the CALOPTERYGIDÆ and the AGRIONIDÆ. The CALOPTERYGIDÆ are represented by the solitary genus CALOPTERYX, or demoiselles, but the AGRIONIDÆ by six genera—*Lestes* (sylphs), *Platynemis* (fairies), *Erythromma*, *Pyrrhosoma*, *Ischnura*, and *Agrion*—all fays.

So far, I have taken fourteen species in the Chester district. They are as follows, together with a very brief description, localities, and times of appearance :—

*Leucorrhinia dubia*. This is, perhaps, our best dragonfly. It has a large, black, triangular spot at the base of each under wing. Heaths in the Delamere district. Very local. June and July.

*Sympetrum vulgatum*. Reddish olive. The pterostigma (the conspicuous spot on the costal margin of the wings near the tip) is also reddish. Heaths in the Delamere district. Evidently scarce and local. The Delamere form, which is exceptionally large, has been honoured with the varietal name of *major*. June.

*Sympetrum scoticum*. The wing-bases have a deep yellowish suffusion or blotch. Abundant on the Delamere heaths in August and September. The sexes in *L. dubia* and *S. scoticum* differ very much in coloration.

*Libellula quadrimaculata*. Easily distinguished, for, as the name implies, it is the four-spotted dragonfly. Further, the lower wings possess a large, triangular, basal patch of dark brown beautifully reticulated with yellow. I have only met with this insect on one of the Delamere heaths. June.

*Orthetrum cærulescens*. The male, especially, is powdered with "cobalt blue." Merionethshire; near Parkgate; Bidston, near Wallasey. Scarce. July.

*Brachytron pratense* (ÆSCHNIDÆ). This is one of the largest species of dragonflies. Spotted with blue. I have only taken it near the Black Falls, Maentwrog, Merionethshire. July.

*Æschna juncea* (the wood sphinx). Another of the large blue-spotted dragonflies. Occurs on all the wooded Delamere heaths. August and September.

*Æ. grandis*. A large russet-coloured dragonfly, with blue spots and russet-tinted wings. It is easily distinguished by the blue spots on the thorax at the base of each wing. This is our commonest and best distributed species. I have a specimen which flew into a house in Chester. Perhaps the best locality is by the pond on the top of Helsby Hill where, on September 10th, I came across nearly a dozen flying about and resting on the stone wall by the roadside. August and September.

*Calopteryx virgo*. This handsome insect, all aglow with peacock green, I found by the wooded streams in Merionethshire. The variety *eversmanni*, in which the wings of the male are smoky, is the form on the banks of the Dee. June and July.

*C. splendens*. The wings of the male are transparent with a broad, dark, central band. I mention this lovely species as I have a strong recollection I saw three or four specimens on the lower reaches of the Dee, a mile or so above Chester, some years ago. But, "as both species of *Calopteryx* never occupy the same stream or brook," I fear I was mistaken. June and July.

*Lestes sponsa*. One of the small, blue and black dragonflies. The colours, however, are bronzed, and therefore permanent. On one or two of the pools on the Delamere heaths. July and August.

*Pyrrosoma minium*. Easily identified by its ruby-coloured body. Wooded Delamere heaths. June.



*Ischnura elegans*. A small black-bodied insect with the eighth segment blue. Sedgy ditches; Sealand, near Chester. July.

*Agrion puella*. Another of the small blue and black dragonflies. Common generally throughout the summer, on the long grass and rushes of damp meadows, and by the edges of ponds.

*A. cyathigerum* (the heart-spotted fay). Very similar to the last in appearance. "The second segment of the abdomen of the male possesses a heart-shaped spot." ('Illustrated Handbook of Dragonflies'). Found throughout the summer, and in situations similar to those frequented by *A. puella*.

Dragonflies, in spite of a formidable name, are perfectly harmless. Their capture, and, it may be remarked, their intelligence, are matters which may be estimated according to their size. Many of the smaller species (AGRIONIDÆ)—the fairies and fays—seem almost insensible to the approach of the collector, and can often be taken by hand. The capture of the largest species (ÆSCHNIDÆ)—the sphinxes—is frequently a more difficult matter. *Æ. juncea* is the most intelligent dragonfly I know. I can conjure up before me a vision of a certain pool, on one of the Delamere heaths, fringed with a margin of rush and sedge. Here, in August or September, a couple of these handsome insects—the intrusion of a third is at once resented by the male—can be seen skimming up and down almost within reach of the net. The word "almost" faithfully represents the narrow distance between your net and the insect. But it is quite enough on the side of the dragonflies. There they go, along and back again. They are only some five feet above the water, and so close that you can see every spot on their gaily decked bodies. Do not strike until you are sure, for, if you miss, off goes the insect, and you may see it no more. But here is a little point of only a foot or so of bank projecting into the water. Let your insects get thoroughly accustomed to their line of fancied safety, and then, as one returns, stretch yourself out from the little cape and you stop the astonished dragonfly! Some species show, to a marked degree, the faculty of curiosity. Quite half-a-dozen *L. scoticum* have, at different times, settled upon my net—apparently for a period of examination and inquiry! I always let these go in return for their professions of fraternity.

I use a common cane net with a bamboo or oak sapling handle. The bag is about two feet deep, rounded at the bottom, and made of the material known in milliners' shops as "Paris net." The starch, or stiffening, is previously washed out in warm water. The cane hoop runs through a calico hem at the top of the bag. The whole instrument is so light that it responds to every action of the wrist, and it offers the smallest possible obstruction to the air. I prefer the white—for even if you are taking Lepidoptera, and at night, you can always see your captured insect by holding the bag



against the sky. I have seen green nets and even black nets, but give me a white one.

Dragonflies are best set as soon as they are killed—say, by a pinch on the thorax, or, better still, by the cyanide bottle. The cyanide does not seem to produce *rigor mortis* as in the case of Lepidoptera. I use a flat setting-board. It gives the dragonflies a smarter appearance; but this is, perhaps, a matter of opinion. If unset and dried they can be easily relaxed by being placed in a well-corked pickle bottle half filled with cut and bruised laurel leaves with a piece of perforated card on the top. By this method there is no fear of “mould,” and the same may be said in relaxing Lepidoptera. Insects may be left, in splendid condition for setting, as long as a fortnight, according to the time of year.

The great objection against most of the dragonflies is that their colours fade. But their identity does not depend exclusively on these fading colours. And, even in a faded dragonfly, the markings reappear under a pocket microscope. At any rate a collection of these insects is a beautiful and interesting sight, and will well repay the exertions of, I venture to prophesy, many a future collector.

Chester, October 28th, 1892.

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### DEIOPEIA PULCHELLA IN HAMPSHIRE.

By G. B. CORBIN.

FOR every recorded occurrence of this and other similarly erratic species no doubt many specimens pass away without ever coming under the eye of an entomologist. This uncertainty of its occurrence in each year is amply verified by the table, Entom. xxv. 154; for while in 1870 thirty specimens are recorded, the five years from 1887 to 1891, inclusive, are without a single record, and this surely not from want of observers, for we must conclude they are ever increasing, if we take into consideration that at present there are three or four journals devoted exclusively to entomology, whilst within the memory of many of us, ‘The Weekly Entomologist,’ ‘The Entomologist’s Annual,’ and other publications of a like nature, died from sheer lack of support. An unrecorded specimen of *D. pulchella*, from the neighbourhood between Ringwood and Christchurch, came into my hands about the end of June. It is bodiless, but I relaxed and “set” the wings, which are in tolerable condition, considering the rough handling it must have passed through, as it was taken some time previously, and its incarceration in the tobacco-box of a labouring man added nothing to its perfection. A second specimen of the moth is said to have been seen at the same time and place, but I

suppose it escaped; indeed, I should not have believed my very non-entomological informant about the species at all, if I had not *seen* the specimen in question. My cabinet previously contained one, taken at Bournemouth in September, 1875 (Entom. viii. 280), and on comparison I find the red spots on the wings of the 1892 specimen are larger and *brighter* than in the other; but this would naturally be the case when the age of each is taken into account. Whether the *size* of the spots has anything to do with their supposed British or Continental origin I must leave, but if, as we may suppose, the 1875 specimen is British born, and the other a "migrant," it seems to point in that direction, although such evidence is much too slender for generalization. The fineness and perfect condition of several of those described as taken in the early summer, would lead us almost to doubt their flight across the Channel from France to our own shores; and yet, I suppose, with a favourable wind the journey would not be of long duration. That the species is a wanderer is well known, and in the comparatively recent work, 'Darwinism,' by Dr. A. R. Wallace, page 359, two separate instances are cited—one from the pen of Mr. MacLachlan in the 'Entomologist's Monthly Magazine' for June, 1885, and the other from an account of a voyage of the 'Rattlesnake,' in which this particular species of moth was taken some thousand miles from the nearest land, so that its flight across the "silver streak" would be a matter of very little moment. Hitherto it seems the anticipated autumnal appearance has not been realized; but we may almost ask if *migrant Colias edusa* produced its anticipated brood, why not *D. pulchella*? The rapid flight of the one, and consequent wider distribution, compared with the lowly flight and comparatively sluggish habits of the other *with us*, may in a slight degree account for the difference, if indeed our changeable and humid climate is not answerable for most of it. It may be argued that what I have said about long flights on the one hand, and sluggish habits on the other in connection with *D. pulchella*, seems contradictory, but is it so? Do we not find an analogy in many of our migrating summer birds, as the warblers, landrail, &c.? For if the knowledge we possess of these feathered visitors was limited to what we see of them in our midst, we should scarcely imagine they made journeys to and fro beyond the seas, although the "cause and effect" in the bird and insect may be, and no doubt is, different.

As *D. pulchella* is sometimes absent, or at least unrecorded, for several consecutive seasons, are we to suppose that it fails to establish itself on British soil, and that for a future supply we are entirely dependent upon migrants from the Continent? Its more frequent occurrence on or near our southern coast is somewhat affirmative of such a supposition, and yet its position in the British list is, in a measure, far more satisfactory than such

species as *L. dispar*, *E. alniaria*, &c. (shall I name *E. cratægi* in the same catalogue?), in its indigenous claim.

The specimen that led to these wandering remarks must have come from a locality not very far removed from that in which one of the earliest—if not the first—recorded British example was taken by my old and very respected correspondent, the late Mr. J. C. Dale, of Glanvilles Wootton, Sherborne. He has more than once described to me how he met with the moth in the *early morning* in the autumn; and though at first inclined to pass it by as some common species, when captured he had no idea what it was, and was more than delighted when he discovered what a prize he had got (Entom. vii. 290). If statistics of captures were taken, I think the county of Hampshire would yield its fair quota to the list of specimens met with in Britain, or at least hold its own with Kent, Sussex, Devon and Cornwall, compared with which the adjoining county of Dorset has few records; this, no doubt, arising from lack of observers, although the rare beauty of this lovely insect would recommend itself even to the uninitiated.

Ringwood, Hants.

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### CLOSTERA ANACHORETA.

By H. G. KNAGGS, M.D., F.L.S.

AFTER nearly twenty years' withdrawal from the world of Entomology, the old love has prompted me to read up the literature which has accumulated since my retirement.

Whilst perusing your excellent periodical, a few days ago, I found a surprise in store for me in the shape of an article entitled "*Clostera anachoreta*," by the Rev. Joseph Greene, M.A. (Entom. xiv., 1881, 117; xxi., 1888, 31), the gist of which seems to be to prove that the above species was imported; though Mr. Greene is good enough to add, "Anyone acquainted with my friend and correspondent, Dr. Knaggs, would not dream of even hinting at his taking part in such a transaction."

Perhaps not; but as the Reverend gentleman addresses himself to a generation of entomologists, few of whom can have any knowledge of me, I must ask you, in justice, to permit me to reopen this question once more,—not for the purpose of imputing to my quondam friend and correspondent any unworthy motive, but merely to lay before your readers certain recorded facts which the author of the paper referred to has thought proper to omit, I do not say knowingly, from his argument, but which, in my humble opinion, completely knock the bottom out of his theory.

Before doing so, however, I must apologise for encroaching on your valuable space by reprinting Mr. Greene's article *in extenso*, this being necessary for the purposes of comparison and reference.



*Mr. Greene's Paper.*

"I am very anxious to once more re-open the question, 'Is *Clostera anachoreta* an indigenous British insect?' I have never thought it to be so. My last communication to 'Entomologist' was in 1881, nearly seven years ago. As it is necessary to my enquiry, and as probably most of your present readers know little as to the particulars of its appearance in this country twenty-eight years ago, I reproduce it here: 'In the year 1859, Dr. Knaggs announced that he had discovered eleven larvæ of this, till then, reputed British species. Ten pupæ resulted, and eggs were produced in due course. These, more or less, were distributed among various entomologists (myself included), and they having, in their turn, obtained eggs, the insect was bred for some years in such vast numbers as to become an absolute drug, and people ceased to keep up the brood any longer. Can any of the numerous readers of the 'Entomologist' inform me whether it has ever been taken since then in a 'state of nature?' I observe in the 'Zoologist' (1863, p. 8694), a notice from Mr. Sidebotham that he had taken a larva at Folkestone, very near the place where Dr. Knaggs made his discovery; and a similar notice from Mr. Meek, in the 'Ent. Mo. Mag.' (i. 123). These instances are all that I can discover, and they do not answer my question in the way I desire, as these larvæ were found in the same place as Dr. Knaggs's, and the 'home-breeding' had, perhaps, scarcely fallen through (Entom. xv. p. 117). Two, and only two, replies to my question appeared in the same volume (pp. 133, 160). The latter I dismiss for the present. The first was extremely interesting, and very much to the purpose. From it I make the following extracts:—'In answer, &c., I send an account of my own experience. In September, 1861, my father found a larva feeding on poplar, in some small plantations below West Cliff, Folkestone; but I did not recognise the species till the pupa hatched on April 27th, 1862. . . . This larva of *C. anachoreta* and the subsequent ones of this species we found in 1862-3, were only on this "balsam poplar." In the autumn of 1862 my brother and I found twelve larvæ; one died when young, the other eleven changed into pupæ, all of which hatched in the following spring. . . . In October, 1863, we found *Notodonta ziczac*, *N. dictæa*, and one larva of *anachoreta*, which we did not keep, as we had bred them in plenty. During that month we turned out eighty-four nearly full-fed larvæ of *anachoreta*, but not all bred from the same parents, in different places among these plantations. We put the larvæ on the same species of poplar we had first found them on, in order thoroughly to establish the species there; but *since that date* we have neither of us *seen the larva* of *anachoreta* there, although we have been at Folkestone *every autumn up to the present time*, . . . not having seen an *anachoreta* larva for eleven years, I was deceived in the spring of 1874, by finding some young larvæ in these plantations, which proved to be those of *S. salicis*.—T. H. Briggs, May 14th, 1881.' (The italics are mine.)

"From the above it will readily be seen that, even in its birth-place, the insect steadily diminished in numbers, until in 1864 it disappeared altogether, though eighty-four full-grown larvæ had been

distributed in the locality; and though carefully sought for eight successive autumns, not a single specimen was taken. It is further to be observed that the *one* larva taken by Mr. Sidebotham, and that by Mr. Meek, were both captured at the *original* locality and prior to 1864.

"In the other reply Mr. S. Norman refers me to Entom. vol. ix. 232. Mr. Norman states there that he found a pupa, but did not know what it was, until it emerged the following May; and in his more recent communication adds, that he found it under loose bark on *willow*. This seems strange, as every record gives *poplar* as the food of *anachoreta*. Is Mr. Norman quite sure that he did not mistake *Clostera curtula* for *anachoreta*? Until this be clearly ascertained I cannot attach much value to this communication. Since I wrote in 1881 I have again carefully examined the pages of the 'Zoologist,' 'Entomologist,' and the 'Ent. Mo. Mag.,' with the result that (putting aside Mr. Norman's statement as doubtful, and the announcement of a single larva having been bred in confinement) no mention of the capture of *anachoreta* in *any* stage has been recorded since 1864, a period of twenty-three years.

"I said, in the commencement of this paper, that I did not believe *anachoreta* to be an indigenous British insect years ago. Still less do I believe it to be so now. All who had the opportunity of breeding it, after its discovery in 1859, must agree with me in saying that it was a most *prolific* insect. I myself have had three broods within twelve months, and, as mentioned above, the larvæ multiplied to such an extent that collectors grew tired of it, and ceased to keep up the breed. Now, from about 1854 to 1864 was one of the most (if not the most) energetic periods in the history of British Entomology (Lepidoptera). At no time, during my forty years' experience, has there been a more numerous or more skilled body of collectors, larva hunters, pupa diggers, &c. And yet I am asked to believe that an 'indigenous' British insect, which has two or three broods in the year, whose larva is easily detected, and whose food is found all over the country, could have eluded the searching gaze of hundreds of keen-eyed collectors before 1859, and finally have turned up in *one* spot in England, with a reduced family of eleven! Again, is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home-breeding ceased) that no record of its capture, either as imago, pupa, or larva, can be found up to the present time, a period of twenty-three years. This statement is of course subject to correction. But unless it be very considerably modified, I unhesitatingly express my conviction that *Clostera anachoreta* is not a British insect. It may be asked by some of your readers who may trouble themselves to read these lines, 'Is it not a fact that some insects will reappear after long intervals?' To which I reply undoubtedly, but not, I venture to think, under the conditions above referred to. If it be further asked, 'How then do you explain Dr. Knaggs's discovery?' I answer in one word, 'importation.' Anyone acquainted with my friend and correspondent Dr. Knaggs would not dream of even hinting at his taking part in any such transaction; but that *C. anachoreta*, in one or more of its stages, was ignorantly or intentionally introduced into this

country about 1858 or 1859 is my fixed conviction. Hence its *non*-appearance before those years ; hence its *dis*appearance after 1864.

“Rostrevor, Clifton, Bristol, January 2, 1888.”

(Entom. xxi. pp. 31-33.)

In the first place, why was not the following published ? (The italics and small capitals are mine.)

*Mr. Greene's first omission.*

“At page 7681, ‘Zoologist’ (1861), the late Mr. Edward Newman, after describing the larva of *C. anachoreta*, goes on to say :—

‘THIS BEAUTIFUL LARVA WAS FIRST FOUND BY MY FRIEND MR. SIDNEY COOPER, FEEDING, AS HE BELIEVES, ON *SALIX CAPRÆA* (SALLOW); afterwards by Dr. Knaggs, feeding on *Populus nigra* (black poplar); Mr. Cooper took only two specimens, not being aware of the value of his captures until the perfect insect emerged. Dr. Knaggs was more fortunate, and, although he obtained but few individuals, has succeeded in maintaining a succession of broods: to this gentleman I am indebted for the opportunity of describing the larva. *In confinement it fed voraciously on either of the plants mentioned.*’ . . . .”

The remainder is omitted because it is quite irrelevant to the question, and would, moreover, require the publication of explanatory notes from the ‘Zoologist’ and ‘Intelligencer’ of the period, thereby occupying space quite unnecessarily.

Not having the pleasure of knowing Mr. Sidney Cooper, either personally or by correspondence, or even by sight, I can only go to records for the date of that gentleman’s captures, and at ‘Zoologist,’ 6213, I find a note showing that Mr. C. was collecting at Folkestone in the middle of June, 1858. There is no recorded evidence of his having collected there in 1859; still he may have done so—I am open to correction.

Mr. Greene seems to have an idea that balsam poplar is the only food which *C. anachoreta* will eat in this country, and consequently rejects the captures of Mr. Norman and his friend Mr. Harbour, at Deal (Entom. ix. 232 and xiv. 160), because the pupa found by the former was under willow bark. Mr. Cooper’s captures are declined, I presume, for a similar reason.

N.B. Mr. Cooper has since given his locality as Saltwood, an inland locality about six miles from Folkestone (page 112, ‘Entomologist,’ 1888).

*Mr. Greene's second omission.*

If the reader will kindly refer to Mr. Briggs’s paper (Entom. xiv. 133) he will find that the words left out by Mr. Greene between “following spring” and “In October, 1863,” are as follow :—



" . . . . We also found in that autumn (1862) larvæ of *C. CURTULA*, *C. RECLUSA*, *NOTODONTA ZICZAC*, *N. DICTÆA*, and *DICRANURA VINULA*, BUT ALL THE SPECIES OF *CLOSTERA* WERE ON THE BALSAM POPLAR."

It certainly does seem strange that all the three *Closteræ* should have been found feeding together on balsam poplar, a plant which is not the ordinary food of either of them. The most rational way of accounting for the phenomenon would appear to be that they were all in the same category, so that, if *C. anachoreta* was imported, the other two were also imported.

Let us suppose that they were all foreigners, and let us further suppose that I was aware of the fraud, and was dishonest enough to avail myself of it, does it not seem rather extraordinary that I, at that time a mere tyro, visiting Folkestone for the first time since my childhood, should have contented myself with only one of these prizes?

Let us now take it that *C. anachoreta* was imported, and that *C. curtula* and *C. reclusa* were indigenous, and see how it will work that way.

#### *Mr. Greene's third omission.*

The reader must now please again refer to Mr. Briggs's note (Entom. xiv. 133), where he will find that the words missing between "every autumn up to the present time" and "not having seen an *anachoreta* larva for eleven years" are—

"This may be partly owing to the fact that most of these young poplars have died, or had their lower branches trimmed and grown too high to search: NEITHER HAVE WE SINCE THAT DATE (1863) FOUND THERE THE OTHER LARVÆ JUST MENTIONED. . . ."

Where are we now? According to Mr. Greene's reasoning the reply would be that *C. anachoreta*, being a foreigner, died out from sheer inability to acclimatise itself, and that *C. curtula* and *C. reclusa* . . . . Mr. Greene has not suggested any separate theory as to their disappearance. Surely it is more logical to conclude that the same meteorological influences which played such havoc with its food-plant, and at the same time annihilated its congeners as well as *N. dictæa* and *N. ziczac*, were also the cause of the vanishing of *C. anachoreta*, and consequently of Mr. Briggs failing to find it in that one littoral locality only: no one appears to have looked for it elsewhere, though captures have been recorded from Deal and from Walmer.

Its non-appearance prior to 1858 is very easily explained by the fact that until Mr. Brewer, the Coleopterist, chanced to find *Sesia chrysidiformis* in the "Warren" hard by, Folkestone was almost a *terra incognita* to the collector: that was in 1855 (*vide* 'Zoologist,' 4818), consequently it was not until 1856 that attention was turned to this El Dorado of the Lepidopterist; even then it was not likely that the eager hunters who, in the Warren,

had found such a Tom Tiddler's ground, would be tempted away for the purpose of collecting on the beaten high road between Folkestone and Sandgate.

Further remarks seem unnecessary, as it must be obvious, from the three omissions cited, that Mr. Greene's inferences have been drawn from wrong premises.

Camden Road, London, N.W., Jan. 13, 1893.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from vol. xxv. p. 286.)

*CRIOA*, Walk.

*Crioa acronyctoides*.

*Crioa acronyctoides*, Walker, Lep. Het. xiii. p. 1111, n. 1 (1857).

*Xylina?* *applicata*, Walker, l. c., xv. p. 1736 (1858).

*Briarda?* *indistincta*, Walker, l. c., Suppl. 3, p. 894 (1865).

Moreton Bay. Types in Coll. B. M.

All the types are from the same locality, and two of them were obtained by the same collector.

*FELINIA*, Guen.

*Briada*, Walk.

*Felinia spissa*.

*Felinia spissa*, Guenée, Noct. iii. p. 322, n. 1783 (1852).

*Briarda* (sic) *decens*, Walker, Lep. Het. xiii. p. 1098, n. 1 (1857).

India and Ceylon.

*Felinia precedens*.

♀ *Briarda* (sic) *precedens*, Walker, Lep. Het. xiii. p. 1098 n. 2 (1857).

♂ *Briarda* (sic) *antecedens*, Walker, l. c., p. 1099, n. 3 (1857).

India, Ceylon, and Sumatra. Types in Coll. B. M.

*PANDESMIA*, Guen.

*Pandesma quenavadi*.\*

*Pandesma quenavadi*, Guen., Noct. ii. p. 438, n. 1310 (1852).

*Thria robusta*, Walker, Lep. Het. xiii. p. 1112, n. 1 (1857).

\* *P. anysa*, Guen., appears to be a stunted specimen of this species; *Cerbia partita*, Walk., the Australian representative; and *P. jubra*, Swinh., probably only a fine variety. The latter, however, has no pale apical spot to the secondaries, the entire fringe of which wings is white, and the black discal patches below are more prominent; so that at present it must be considered distinct. *Michera submurina*, Walker, is an allied, but unquestionably distinct, species, though certainly not a distinct genus.

*Cerbia fugitiva*, Walker, *l. c.*, xiv. p. 1365, n. 1 (1857).

Asia and Africa. In Coll. B. M.

Guenée's genus *Pantydia* (type *P. sparsa*, from Australia) is closely allied to the European *Pseudophia illunaris*. It has not at all the aspect of a Polydesmid.

POLYDESMAS, Boisduval.

*Polydesma umbricola*.

♀ *Polydesma umbricola*, Boisduval, Faune Ent. de Madag. p. 108, n. 1, pl. 13, fig. 5 (1833).

*P. laudula*, Guenée, Noct. ii. p. 441, n. 1313 (1852).

♂ *P. boarmoides*, Guenée, *l. c.*, n. 1314 (1852).

Madagascar, Mauritius, Africa, India, Ceylon, Moulmein, Java. In Coll. B. M.

Guenée's type of *P. boarmoides* has the tufts on the front of the anterior tibiæ rather more orange than usual. I have very little doubt that *P. scriptilis*, Guen., is also identical with *P. umbricola*. That species is in our collection from Silhet, and the characters upon which *P. scriptilis* is separated are trivial in the extreme.

The Nilgiri specimens, identified by Mr. Hampson as *P. boarmoides*, are doubtless Guenée's *P. otiosa*, the description of which they fit admirably. I think *P. otiosa* may be distinct, though closely allied to *P. umbricola*: it is smaller, has blacker costal spots on the upper surface of primaries, and the under surface is creamy whitish; the secondaries in the male being almost devoid of markings.

The *P. umbricola* of Walker's Catalogue has very little in common with Boisduval's species.

*Polydesma otiosa*.

*Polydesma otiosa*, Guenée, Noct. ii. p. 442, n. 1316 (1852).

*Alamis brevipalpis*, Walker, Lep. Het. xiii. p. 1051, n. 12 (1857).

Nilgiris and Punjab. In Coll. B. M.

DIATENES, Guen.

*Setida*, Walk.

This genus is closely allied to *Polydesma*.

*Diatenes gerula*.

*Diatenes gerula*, Guenée, Noct. ii. p. 443, n. 1317 (1852).

*D. aglossoides*, Walker (not Guenée), Lep. Het. xiii. p. 1043, n. 2 (1857).

Tasmania. In Coll. B. M.

As this species is figured by Guenée (pl. 18, fig. 5), there ought to have been no difficulty in correctly identifying it.



*Diatenes aglossoides.*

*Diatenes aglossoides*, Guenée, Noct. ii. p. 443, n. 1318 (1852).  
 ♀ *Homoptera costalis*, Walker, Lep. Het. xiii. p. 1072, n. 43 (1857).

♂ *Setida quadrisignata*, Walker, l. c., xv. p. 1853, n. 1 (1858).

North and South-East Australia. In Coll. B. M.

I think it highly probable that this is only a smaller form of *D. gerula*; and it is possible that *D. chalybescens* may be only a slight variety. Fresh examples of *D. aglossoides* are of the colours described by Guenée as characteristic of his *D. chalybescens*; but the latter appears to have one or more extra lines across the primaries.

*ERICEIA, Walk.**Girpa, Walk.**Ericeia inangulata.*

*Hulodes inangulata*, Guenée, Noct. iii. p. 210, n. 1612 (1852).

*Ericeia sobria*, Walker, Lep. Het. xiii. p. 1089, n. 1 (1857).

*Remigia congressa*, Walker, l. c., xiv. p. 1510, n. 20 (1857).

*R. optativa*, Walker, l. c., n. 22 (1857).

*R. pertendens*, Walker, l. c., p. 1512, n. 24 (1857).

*R. congregata*, Walker, l. c., xv. p. 1847 (1858).

*R. optatura*, Walker, l. c., p. 1848 (1858).

*R. amanda*, Walker, l. c.

*Girpa aliena*, Walker, l. c., p. 1849, n. 1 (1858).

*Remigia comitata*, Walker, l. c., Suppl. 3, p. 1018 (1865).

*Hulodes umbrosa*, Walker, Char. Undescr. Lep. p. 91 (1869).

*Girpa fraterna*, Moore, Lep. Ceylon, iii. p. 94, pl. 156, fig. 5.

Asia, Africa, and Australia. In Coll. B. M.

*Ericeia eriophora.*

The synonymy of this species occurs in full in Moore's 'Lepidoptera of Ceylon.'

*Ericeia maxima.*

*Girpa maxima*, Butler, Trans. Ent. Soc., 1886, p. 410, n. 49.

*G. carnea*, Butler, l. c., p. 411, n. 50.

Vavao, Friendly Islands. Types in Coll. B. M.

Judging by the undoubted variability of the species in this genus, it is no longer possible to regard *E. maxima* and *carnea* as distinct species.

*PERICYMA, H.-Sch.*

Staudinger gives this name priority over *Alamis*, Guen., and, so far as date of publication goes, he is correct in so doing; but *Pericyma* is not characterized in such a manner that it can be recognized:—the characters given are, "Border of all the wings

round. Marginal line acutely undulated." If this be considered a sufficient description to supersede Guenée's proper characterization of the genus, Hübner's "Verzeichniss" genera have a better claim to stand, inasmuch as the characters given by him are frequently less general. Most moths have a more or less rounded outer margin to the wings.

Guenée's *Alamis* contains several genera, and it is evident, in the absence of any distinct specification, that the species figured by him (*A. albicincta*) must be his type. The character given by him—"Antennæ hardly pubescent, even in the males"—will not apply to *P. albidentaria* or to "*Alamis*" *polioides*, which have fasciculate-ciliated antennæ in the males; the latter species also differs from the European insect in having the antennæ of this sex denticulate-serrated, the little group of fine bristles being emitted from the serrations; its palpi also have the second article broader and more densely scaled, and the third article porrected and shorter than in *P. albidentaria*. This will, therefore, form the type of a new genus, which may be called *Synalamis*.

*Alamis umbrina*.

*Alamis umbrina*, Guenée, Noct. iii. p. 4, n. 1321 (1852).

*A. continua*, Walker, Lep. Het. Suppl. 3, p. 877 (1865).

Var. *A. albicincta*, Guenée, Noct., l. c., n. 1322 (1852).

India generally. In Coll. B. M.

DUGARIA, Walk.

*Alamis*, Guen. *Alamis* & *Homoptera*, Walk.

*Dugaria glaucinans*.

♀ ? *Alamis glaucinans* ♂, Guenée, Noct. iii. p. 6, n. 1326 (1852).

♂, ♀ *A. ligilla*, Guenée, l. c., n. 1327 (1852).

♂ *A. mendax*, Walker, Lep. Het. xiii. p. 1047, n. 3 (1857).

♀ *Homoptera infligens*, Walker, l. c., p. 1063, n. 35 (1857).

*H. solita*, Walker, l. c., n. 36 (1857).

*Dugaria cilipes*, Walker, l. c., p. 1076, n. 1 (1857).

*Homoptera delineosa*, Walker, l. c., xv. p. 1798 (1858).

*H. disjuncta*, Walker, l. c., Suppl. 3, p. 885 (1865).

Asia and Africa. In Coll. B. M.

The genus *Dugaria* is distinguished by the woolly legs of the male, and a thick silky patch on the under side of the secondaries in that sex. *A. glaucinans* and *disjuncta* belong to the varietal form of the typical species, having whitish bands on the primaries.

(To be continued.)

## CAPTURES AND FIELD REPORTS.

REPORT ON THE SEASON OF 1892.—The entomological season of 1892 was the best it has yet been my lot to experience. On the whole the weather was very favourable, and though no rarities turned up, there was an abundance of common species. Pupæ dug in Epping Forest, in the late autumn, yielded 13 *Nyssia hispidaria* (9 males and 4 females), 20 or 30 *Phigalia pilosaria*, also *Hybernia leucophearia* (females), *H. progemmaria*, *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, and *T. cruda*. Other winter pupæ, from Waldringfield, near Woodbridge, produced *Amphidasys betularia*, *A. prodromaria*, *Notodonta dictæa*, *N. camelina*, *Ptilodontis palpina*, *Dicranura furcula*, *Noctua plecta*, *Axylia putris*, *Hadena pisi*, *Dianthæcia capsicola*, *Acronycta tridens*, and *Cymatophora ocularis*. A nice series of *Hybernia leucophearia* and several *Phigalia pilosaria* were taken from tree trunks in Richmond Park on Feb. 18th, and on April 2nd single specimens of *Amphidasys prodromaria* and *Xylocampa lithorhiza* from oaks in Fairmead Bottom, Epping Forest. On the following Saturday the sawflies near High Beech yielded *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, and *T. cruda* (all commonly), also 3 *T. munda*, 1 *Pachnobia rubricosa*, and a dozen or so *Cerastis vaccinii*, whilst *Selenia illunaria*, *Larentia multistrigata* and *Anticlea badiata* were netted; *X. lithorhiza* was again taken, this time on a pine trunk. The evenings of May 26th, 27th, 28th, and 30th, at Highgate, were exceedingly close and dark, light proving very attractive; *Plusia gamma*, *Rumia cratægata*, and several other common species, came in the window much quicker than I could put them out, and among them 12 *Odontopera bidentata*, with occasional *Hadena pisi*, *H. thalassina*, *Habrostola triplasia*, *Cucullia umbratica*, and *Notodonta camelina*. A couple of hours at Chingford, on the evening of May 31st, turned up *Iodis lactearia*, *Numeria pulveraria*, *Ephyra punctaria*, *Lithosia aureola*, *Thyatira batis*, and *Odontopera bidentata*, the latter very abundant just at dusk. *Dicranura bifida*, just emerged, was found at rest on a poplar on Clapton Common on June 5th, and on the following day (Whit Monday) I saw the first 1892 *Colias edusa* at Darenth Wood, where I spent the earlier part of the day. *Argynnis euphrosyne* and *Anthocharis cardamines* were plentiful, but moths were scarce, and the best ones taken were *Phibalapteryx vitalbata* (4 from *Clematis*), *Venilia maculata* (abundant), *Lomaspilis marginata*, *Platypteryx falcata*, *Tephrosia biundularia*, *Halias prasinana*, *Numeria pulveraria*, *Iodis lactearia*, and *Anaitis plagiata*. June 9th, at Chingford, was a repetition of May 31st, with the addition of 3 *Eurymene dolabraria*, but on the following evening, and again on June 16th, treacle attracted swarms of Noctuæ. Among these were *Thyatira batis*, *Xylophasia rurea* and var. *combusta*, *X. hepatica*, and *Aplecta nebulosa* (all very common), *Leucania comma* (2), *Apamea gemina* (3 only), *Noctua festiva* (very fine and in great variety), *N. brunnea*, *N. plecta*, *Miana strigilis* and var. *æthiops*, *M. fasciuncula* (both abundant), *Rusina tenebrosa*, *Mamestra anceps*, *Hadena suasa*, *H. thalassina*, *H. dentina*, and also 2 *Iodis lactearia*; whilst 3 *Amphidasys betularia* were taken on tree trunks, and *Halias prasinana*, *Tephrosia biundularia*, *Platypteryx hamula*, and *Numeria pulveraria* were beaten out. A week at Folkestone (June 18—26) was interrupted by the only thoroughly wet day during the month, which totally spoiled one day and the best part of the next. The principal feature of this visit was the immense number of the Lycænidæ: *L. adonis*, *L. alsus* and *L. icarus*



rivalled one another in quantity, whilst *L. medon* occurred sparingly; *Thecla rubi* was common but very battered, and *Polyommatus phloëas* abounded; *Arctia villica*, *Nemeophila russula* (8 or 9 in all), *Euclidia glyphica*, *E. ni*, *Venilia maculata*, *Lomaspilis marginata*, *Melanippe galata*, larvæ of *Bombyx quercus* and *Odonestis potatoaria* (the latter exceedingly abundant at dusk), *Phytometra ænea*, *Emmelesia albulata*, *Strenia clathrata*, *Saturnia carpi* (2 larvæ on sweet brier), *Euchelia jacobæ*, and *Zygæna filipendulæ* (larvæ and pupæ), were all more or less plentiful in the Warren, the latter in countless numbers. Other butterflies noted were *Hesperia malvæ*, *H. tages*, and one *Colias edusa*; whilst treacle, which I tried on three evenings, produced quantity if not quality. *Agrotis exclamationis* and *Miana strigilis* were the leading spirits, and of the former I secured some nice varieties; besides the above many other species turned up, but nothing good. Among them were *Noctua rubi*, *N. festiva*, *N. plecta*, *Grammesia trilinea*, *Leucania comma* (all common), with occasional *L. pallens*, *Hadena suasa*, *H. pisi*, *H. dentina*, *Agrotis suffusa* (quite fresh), *Apamea gemina*, *Mamestra anceps*, and *Phlogophora meticulosa*. My efforts in this direction were very much restricted, owing to a nervous landlady, who objected to anyone being out after about 10.15; but as we were very comfortable. I could not object. The same week my cousin, Mr. W. J. Ogden, was at Waldringfield (Suffolk), and took *Aplecta herbida* and *Hecatera serena* off tree trunks, larvæ of *Cleora lichenaria*, *Asphalia ridens*, *Lasiocampa quercifolia*, and *Nudaria mundana*. Treacle attracted, amongst others, *Aplecta advena*, *Dipterygia pinastri*, *Noctua c-nigrum*, *N. rubi*, *N. festiva*, *Hadena pisi*, *Leucania comma*, *L. pallens*, *Gonoptera libatrix*, *Mamestra anceps*, and *Axylia putris* (all more or less commonly), also *Notodonta camelina* at light. Two nice dark vars. of *Abrazas grossulariata* were bred in June from Stamford Hill larvæ; and in July a fair number of *Geometra smaragdaria* emerged from Bentfleet larvæ, from which eggs were obtained and the brood continued. Three nights' treacling during July again attracted large numbers of moths at Chingford: *Noctua brunnea*, *N. augur*, and *N. triangulum* were exceedingly abundant and fine, but *N. festiva* was almost over, and *N. plecta* very sparing. *Xylophasia polyodon* and *Tryphæna pronuba* swarmed, the latter varying to a great extent; *X. lithoxylea* was very scarce, *Thyatira batis* still plentiful and *T. detersa* by no means uncommon and in fine condition; also *Dicycla oo*, *Caradrina blanda*, *Apamea gemina*, *A. oculatea*, *Mamestra anceps*, *Miana strigilis* and var. *æthiops*, *M. fasciuncula*, *Boarmia repandata* (frequently), *Leucania pallens*, *X. hepatica* (still a few), *Tryphæna orbona*, and *Cosmia trapezina*. Insects netted at dusk, on the same evening, included *Angerona prunaria*, *Hemitea thymiararia*, and *Miana arcuosa*, and one *T. detersa* was found at rest on a tree trunk. This latter species turned up at Finchley on July 12th, at treacle; and, on July 16th, an afternoon visit to Bentfleet for *Hesperia lineola* was fairly successful. Owing to the train being very late I did not arrive until 5 p.m., and immediately commenced working along the sea-wall towards Leigh, taking 13 specimens at rest on the grass and kicking up 2 *Acidalia immutata*. From July 20th *Nudaria mundana* began to emerge, and on the same date the first of a number of *Ennomos angularia* appeared, all of which, however, showed little variation. On July 22nd, the first of the Folkestone *O. potatoaria* showed up, and out of only twenty specimens the females varied considerably; one is of quite a greyish tint, and another has assumed the colour of the male, whilst two or three others are more or less suffused with the same colour. The males, however, show

no variation. On Aug. 2nd light again proved attractive at Crouch End, amongst others *Caradrina blanda* and *Orthosia upsilon* putting in an appearance, whilst, on the following evening, treacle utterly failed at Lark's Wood, Hale End, only three moths coming at all, including one quite fresh *T. batis*. Aug. 8th to 14th was spent in a boat on the River Thames, between Oxford and Taplow, so that I had little opportunity for collecting; but twice when I treacled it totally failed. At Clifton-Hampden, honey-dew on the brambles was very attractive to *Noctuas*; among them *Triphæna orbona*, *Noctua rubi*, *N. umbrosa*, *Leucania pallens*, *L. impura*, and *Agrotis nigricans*, whilst *Acidalia emarginata* and *Cilix spinula* were netted. Near Pangbourne (Aug. 10th), on the slope of a hill, *Anaitis plagiata* abounded, and was in fine condition. *Strenia clathrata* was also kicked up, and *Lycæna corydon*, *Colias edusa*, and *Epinephele janira* (a blotched female) taken. On the following day *Colias edusa* was seen in some numbers near Reading, flying across the river; also *Gonepteryx rhamni*, and a great number of *Vanessas* and other common butterflies. *Colias edusa* was occasionally seen down to Taplow, and also six counted from the train between there and London, one close to Paddington. *L. corydon* was again seen near Marlow. On Aug. 13th *Apamea ophiogramma* was netted over some ribbon-grass in the garden here (Highgate), and on Aug. 17th *Agrotis nigricans* was taken at light. As already recorded, on Aug. 23rd 11 *C. hyale*, 15 *C. edusa* and one var. *helice* were taken at Lowestoft in one small lucerne field, and also a rather small form of *V. atalanta*, with very dark bands more or less suffused with black. The *Vanessidæ* were in the greatest abundance, especially *V. atalanta*, and *Agrotis tritici* was frequently seen flying in the sun over the lucerne. Once, also, was *T. pronuba* seen, hovering from flower to flower, and looking like a small *stellatarum*. *Ennomos angularia* and *Catocala nupta* began to appear very sparingly on the fences with the first days of September, but were soon over. Between Aug. 10th and Sept. 10th my cousin at Waldringfield took 25 *C. hyale*, besides seeing a good many more, and a nice series of *C. edusa* (which were very common), including 11 of the var. *helice*. One male *C. edusa*, though quite fresh, has the hind wings and the black spots on the fore wings very thinly scaled, giving the insect a pale and semi-transparent appearance, and two others (also males) have a purple gloss on the hind wings. Other captures included *Vanessa polychloros*, *Satyrus semele*, *Macroglossa stellatarum*, *Heliothis dipsacea*, *Tethea subtusa*, *Cosmia affinis*, *C. diffinis*, *Luperina cespitis*, *L. testacea*, *Heliophobus popularis*, *Charæas graminis*, *Habrostola urticæ*, *Noctua rubi*, *Agrotis puta*, *Miana captiuncula*, *Melanippe unangulata*, *Cidaria picata*, *Acidalia emarginata*, *Epione apicaria*, *Ennomos fuscantaria* (3 imagines and 1 larva), *Cilix spinula*, and *Nudaria mundana*. Larvæ of *Notodonta camelinea*, *Ptilodontis palpina*, *Thyatira derasa*, *Orgyia pudibunda* (common), *Acronycta psi*, *A. tridens* (both common), *Amphidasis betularia* (very common), *Halias prasinana*, and *Platypteryx hamula*. Pupæ of *Agrotis saucia*, *Hadena protea*, and *Smerinthus ocellatus*. On Sept. 23rd *Gortyna flavago* was found on a brick wall at Finsbury Park, and on the 29th *Agrotis saucia* on a wall in Cornhill, City: this was fairly fresh, except that one side seemed to have received a blow. *Oporabia dilutata* appeared on Oct. 5th, *Miselia oxyacanthæ* on Oct. 15th, and *Hybernia defoliaria* on Oct. 20th, all at Crouch End. The season wound up with a night's treacling at Chingford, on Oct. 15th, when moths again swarmed. *Cerastis vaccinii* was almost rivalled in numbers by *Scopelosoma satellitia*, both varying considerably and in fine



condition. *M. oxyacanthæ* was not far behind in number, and, though some were a bit worn, many were quite fresh, and some nice dark forms were taken. 1 *Cerastis spadicea*, 5 *Xanthia ferruginea*, 1 *Anchocelis pistacina*, and 1 *Amphipyra pyramidea* complete the list, and, I regret to say, end up the season of 1892 as far as imagines are concerned.—RUSSELL E. JAMES; Chesterville, Hornsey Lane.

CHÆROCAMPA CELERIO AT NOTTINGHAM.—A specimen of this rare hawk moth was taken at Nottingham on Oct. 12th, 1892, on a shutter, in St. Anne's Well Road, by Mr. A. Pike, President of the Nottingham Amateur Entomological Society, and was exhibited at the Society's rooms during last meeting.—W. FERRIS.

GERRIS RUFOSCUTELLATA IN SURREY.—I took this species on a pond at Norbury, April 18th, 1892.—R. M. LEAKE; 15, Alleyn Park, West Dulwich, S.E.

CREMASTOGASTER SCUTELLARIS.—My wife purchased some apples at a shop in Plymouth, about the 8th of November last, and a few days after was about to make use of one, when she discovered a hole where apparently an apple moth larva, *Carpocapsa pomonella*, had escaped; to her surprise she found the core inhabited by the above-named ant, a female, and a Cicade in the pupa stage; both were sent to Mr. E. Saunders, who identified the ant, and remarked, "The Homopteron I do not know, but it reminds me of an immature *Issus*." He also drew my attention to the fact that I am not the first to record its capture in England, by a note in the E. M. M. for July, 1889. Dr. Mason exhibited a number of specimens at the meeting of the Entomological Society of London on the 5th of June; his specimens were all taken in a fernery at Burton-on-Trent, and supposed to have been imported from the South of Europe with cork.—G. C. BIGNELL; Stonehouse, Plymouth, Dec. 31, 1892.

GNOPHRIA RUBRICOLLIS IN JUNE.—A friend took this insect in June last in Somersetshire. Is not this early in the season? I have never myself taken this moth, but relatives used to take it in Gloucestershire in August. I see Newman gives August as the time of its appearance.—T. B. JEFFERYS; Clevedon, Dec. 9, 1892.

EUGONIA FUSCANTARIA AND E. EROSARIA AT CHESTER.—Among the numerous *E. alniaria* (*tiliaria*)—unusually numerous here last autumn—I took, about the 23rd of last September, two specimens of *E. fuscantaria* and one of *E. erosaria* (males) from the gas-lamps in the suburbs. My apparatus, as usual, was a short ladder and a well-charged cyanide bottle. I am not aware that the two species have been taken previously at Chester. Mr. A. O. Walker, in his District List, quotes *E. fuscantaria* in the Upton Valley and at North Birkenhead, but "scarce." *E. erosaria* he records at Tranmere and Rock Ferry, but also "scarce."—J. ARKLE; Chester.

COLLECTING IN ARRAN.—The months of August and September, and a few days of October, were spent by me in the South of Arran, where I hoped to make many additions to my collection; that this was not done is due to many causes. The weather was, on the whole, as unfavourable as it well could be. Little sunshine, a heavy rainfall, and boisterous winds were its prevailing characteristics. "Breezy Bannan" fully maintained its unenviable notoriety. Standing close to the southern shore, but from three to four hundred feet above the sea, it seemed to be the special mark of all



the winds. There were days, and weeks of days, when not an insect was upon the wing; and if any butterflies or moths were beaten out of their snug retreats, one had but a moment's chance of capturing them. They were either netted at once—which happened seldom—or were swept helpless away on a wild course, which, since Arran is an island, would surely land them—if one may venture so to put it—in the sea; and when, by some rare benignity of Nature, the sun did show himself, and the winds were laid so that one could be abroad, and yet breathe regularly, it seemed to be altogether incongruous and almost profane—like whistling on a Sunday—to go with a net to catch butterflies. And the fishing in the streams, and in the sea when it was safe to venture out, was so good that many days were given to it which, had they been otherwise used, might have added much to a meagre list of captures. But when trout are rising, or when saithe and big lythe are on the take, there are flies, other than *Rhopalocera*, that have an engrossing interest. Sugar was a total failure until the end of September. Such moths as were out preferred the flowers of the ragwort, of which there was more than could be worked. Bennan does not lend itself to sugaring. There are no trees upon its wind-swept heights; there are no palings, and the field fences are chiefly made of old telegraph-wire, concerning which the only recommendation that the collector can discover is, that here a little sugar goes a long way; and the scanty supports, put up with evident reluctance, as if the “hang” of the thing was of little account, were a few hedge-stakes, more than sufficiently tarred, or a bar or two of iron that could carry nothing rustier than itself. But there were some grand old boulders upon the beach, and some old gate-posts showing the rough dressing of the Stone Age, and these—notwithstanding their venerable antiquity—were sugared; so was a barn-door that was handy, but, although it got the first touch of the brush, and was always looked at last, it was not hit off. There never was a *Noc-tua* at that door. *Rhopalocera*:—*Pieris brassicæ*, a few on the wing, the larvæ swarming in the kale-yard and in the turnip-fields. *P. napi*, common. *Colias edusa*, as has already been recorded, was seen and captured close to Bennan, unhappily not by the writer. Of *Argynnis aglaia* about a dozen were seen, and four were taken, but they were faded and worn. *Vanessa urticæ*, common, richer in colouring than southern specimens. *V. atalanta* and *V. cardui*, two newly-emerged examples of each taken late in September. *Satyrus semele* was everywhere on the cliffs, and almost as common as *Epinephele janira*. *Erebia athiops* and *Cænonympha typhon*, although searched for, were not met with; very likely they were not looked for soon enough. *C. pamphilus* was far from being common, and the *Lycænidae* had as representatives only *Polyommatus phlæas*, very common in September, and three specimens of *Lycæna icarus*. *Heterocera*:—Whenever there was a glint of sunshine, *Charæa graminis* darted here and there over the heather.—oftener there than here,—so that it was no easy matter to catch it. On the moor, in the afternoon, *Cidaria testata* swarmed; it might have been taken by hundreds. The heather yielded up *Noctua glareosa* (1), *Melanippe hastata* (1), and many examples of *Cidaria fulvata* and *Ypsipetes sordidata*. Eighty larvæ of *Bombyx rubi* were taken on the heath, and one larva of *Trachea piniperda* resting on bracken—a wanderer, no doubt, from some neighbouring fir tree. On the ragwort flowers there were got *Leucania pallens* and *D. littoralis*, one only of each. *Hydræcia nictitans* and *H. micacea*, common. *Apamea oculatea*, abundant and variable. *Miana strigilis*, *M. furuncula*. *Caradrina quadripunctata*, very common. *Agrotis tritici*,

*A. suffusa*, *A. segetum*, *A. nigricans*, *Noctua xanthographa*, *N. plecta*, *N. c-nigrum*, *Xanthia fulvago* (1), and *Amphipyra tragopogonis*. At sugar, *Agrotis exclamationis*, *Tryphæna orbona*, *T. promuba* (some fine dark forms), *Orthosia macilenta*, *Anchocelis litura*, *Xanthia circellaris*, and *Phlogophora meticulosa*. On the 6th of October saw the only real success at sugar; need I add that it was the last night of my stay in Arran? The night was mild and drizzly, what the natives call "soft," and so I took about forty Noctuæ, some of which are named above, and, in addition, *Calocampa vetusta*, *C. exoleta*, and *Epunda nigra*, all of which then appeared for the first, and for me last, time. On the top of the cliffs, among the long grass and dwarfed bushes, were found *Rumia luteolata*, *Eubolia cervinata* and *E. limitata*, *Dasydia obfuscaria*, *Anaitis plagiata*, and *Camptogramma bilineata*. And here, from the middle of September, whenever there was sun, *Plusia gamma* swarmed in thousands, darting from flower to flower; and hardly less numerous, on almost every weed, the larvæ of *Spilosoma menthastri* rested or crawled.—A. B. WATSON; Edinburgh.

COLEOPTERA IN ARRAN.—As we do not often get any records of Coleoptera from the Isle of Arran, it may be of interest to mention a few species taken by Mr. A. B. Watson in the months of August and September, 1892. Mr. Watson, who has very kindly presented me with the insects, says that the specimens were just packed up as he chanced to meet with them while looking for Lepidoptera. The following is a list of the species sent me:—Among the Carabidæ are several specimens of *Notiophilus aquaticus*, L., and *N. substriatus*, Wat. *Carabus catenulatus*, Scop., appears to be very plentiful, while there are several specimens of *C. granulatus*, L., *C. monilis*, F., and *C. violaceus*, L., and a solitary one of the (var.) *con-situs*, Pz. *Nebria brevicollis*, F., seems very common, while *Leistus* is represented both by *fulvibarbis*, Dj., and *rufescens*, F. There is also a single male *Clivina fossor*, L., *Dyschirius salinus*, Schaum., and *Lebia cyanocephala*, L., several of *Broscus cephalotes*, L., *Calathus cisteloides*, Pz., *C. mollis*, Marsh, and *C. melanocephalus*, L. *Pterostichus cupreus*, L., *P. lepidus*, F., *P. nigrita*, F., *P. niger*, Schal., and *P. melanarius*, Ill., seem plentiful. *Amara fulva*, De G., *A. spinipes*, L., *A. bifrons*, Gyll., and *A. acuminata*, Pk., are well represented, as are also *Harpalus ruficornis*, F., *H. æneus*, F., *H. rubripes*, Duft., and a single specimen of *H. caspius*, Stev. *Bembidium rufescens*, Guér., *B. biguttatum*, F., *B. pallidipenne*, Ill., *B. flammulatum*, Clair., and *B. punctulatum*, Drap., represented this group, a single specimen of *Tachypus flavipes* terminating the list of Carabidæ. The other families do not appear to be well represented, as in all cases I have but a single individual of each; but, bearing in mind the fact that Mr. Watson was not specially searching for Coleoptera, this is not surprising. The Dytiscidæ were represented by *Hyphydrus ovatus*, L., *Hydroporus 12-pustulatus*, Oliv., and *H. assimilis*, Pk. *Quedius fuliginosus*, Gr., *Q. nigriceps*, Kr., *Q. semiæneus*, Steph., and *Philonthus laminatus*, Creutz., were the only representatives of the Staphylinidæ. Among the Silphidæ were *Agathidium nigripenne*, F., *Silpha thoracica*, L., and *S. lævigata*, F.; *Meligethes rufipes*, Gyll., and *M. viridescens*, F., being the only types of Nitidulidæ; as also *Adalia bipunctata*, L., *Halyszia 14-guttata*, L., and *Scymnus frontalis*, F., were of the Coccinellidæ. The Scarabæidæ were much better represented in *Aphodius erraticus*, L., *A. fossor*, L., *A. fimetarius*, L., *A. rufescens*, F., *A. tessulatus*, Pk., *A. punctato-sulcatus*, L., *A. luridus*, F., and *A. rufipes*, L., as well as by *Geotrupes typhæus*, L., *G.*



*stercorarius*, L., *G. mutator*, Marsh., and *G. sylvaticus*, Pz. Amongst the Telephoridæ were *Telephorus darwinianus*, Shp., *T. fuscicornis*, Ol., *T. pallidus*, F., and *Malachius æneus*, L., as also *Anthocomus sanguinolentus*, F., *Dolichosoma nobile*, Ill., and *D. lineare*, Rossi. Amongst the Curculionidæ were *Otiorrhynchus septentrionis*, Hbst., *Barynotus schönherri*, Zett., *Anthonomus ulmi*, DeG., and *A. pomorum*, L., as also a fine male of *Rhopalomesites tardii*, Curt., the Chrysomelidæ having only two representatives in *Chrysomela varians*, F., and *Crepidodera transversa*, Walk. —in all, seventy-eight species. There can be no doubt, had Mr. Watson given particular attention to the Coleoptera, we should have had a much more extended list to record from the Isle of Arran.—T. R. BILLUPS.

COLLECTING IN SOMERSETSHIRE, 1892.—I have to report another poor season as regards sugar: general collecting I have not done. Almost all common insects were very few, or absent, save *Anchocelis pistacina*. *Agrotis saucia* was more plentiful than usual; and I took, for the first time for several years, *Xylina petrificata* (*socia*), some dozen specimens. I noted three or four *Colias edusa* in my garden, the first I have seen here since 1877. *Vanessa atalanta* was most abundant, but of *V. cardui* I did not see a single specimen. Several pupæ and one imago of *Acherontia atropos* were brought to me, and a brood of ten larvæ of *Chærocampa elpenor* were taken on the hairy willow herb (*Epilobium hirsutum*). *Pieris rapæ* and *P. brassicæ* were very abundant.—H. W. LIVETT; Wells, Somerset.

COLLECTING IN READING AND DORSET, 1892.—During the past season, amongst many other things, I have taken *Dicycla oo* (the second recorded for the district), one *Epunda lutulenta*, a series of *Aplecta tincta*, a few *A. advena*, *Boarmia roboraria*, *B. cinctaria* (new last season to the list), *Angerona prunaria*, *Geometra papilionaria*, *Asthena blomeri*, and was fortunate to net one black male *Fidonia piniaria* (somewhat worn). The latter end of June and first part of July I was in Dorset, and on Powerstock Common *Argynnis aglaia*, *A. adippe*, *Melanargia galatæa*, and *Satyrus semele* were common. *Zygæna trifolii* was very abundant, in great variety and splendid condition. *Thyatira derasa* and *T. batis* were more plentiful at sugar than I have ever noticed before. Returning to Reading, *Noctua rhomboidea* came to sugar on the 16th and 19th of August, but was much wasted; from thirty taken, not more than six were worth setting; of the others, the males were rejected and the females boxed. The latter end of August and beginning of September *Asphalia diluta* was frequent at sugar, while in the middle of the month *Xanthia citrargo* swarmed on the sugared twigs of lime trees. *Agrotis saucia* has been got all over the district. On Sept. 19th *X. aurago* appeared, and till the end of first week in October was taken in astonishing numbers, and of almost every conceivable variety, from a pale yellow to the deep orange-red of some winter sunsets. On Oct. 20th I tried in a likely place for *Dasycampa rubiginea*, but failed to get it: others, who sugared right through the month and into November, were, however, more successful. The only insect above the common I got on my last attempt was *Calocampa vetusta*, a species seldom taken here. Butterflies have been out in goodly numbers, but a few species have not appeared so numerous in the autumn as in the spring. *Vanessa polychloros* I saw frequently in May: it has not, so far as I know, been captured since. *Gonopteryx rhamni* could be got here and there in ones and twos, but it did not appear in anything like plenty. As in other places, *V. atalanta*, *V.*



*cardui*, and *V. io* have been out in unusual force.—J. CLARKE; Reading, Jan. 20, 1893.

NOTES FROM THE NEW FOREST.—Having been located at Brockenhurst nearly the whole of last summer, it may be of interest to give an account of my doings there in the way of Lepidoptera. I arrived in the evening of June 28th, after a hot day, and just as a thunderstorm was threatening, which, however, did not come to anything, but nevertheless rendered the evening very favourable for sugaring; consequently insects flocked to the sugar, every tree being completely smothered, increasing each time for four consecutive nights, when I noticed sometimes as many as 150 specimens, or more, on a single patch; I also reckoned that upwards of 55 species (Macros) made their appearance, not to say anything of Micros, which were thick enough. Some of the very commonest Geometræ were present, which seldom are seen at sugar. Four species were a continual pest—*Noctua brunnea*, *Triphæna pronuba*, *Aplecta nebulosa*, and *Boarmia repandata*, with a good sprinkling of *A. prasina* (some only in fine condition), *Thyatira derasa*, *T. batis*, *Xylophasia lithoxylea*, *Apamea gemina*, *Miana strigilis*, *Rusina tenebrosa*, *Agrotis exclamationis*, *Noctua triangulum*, *N. festiva*, *Hadena thalassina*, *Eurymene dolobraria* (worn), *Boarmia repandata* v. *conversaria*, *B. roboraria*, *Tephrosia luridata* (not many good); also a few each of *Leucania turca*, *Xylophasia hepatica*, *Mamestra sordida* (2), *Noctua plecta*, *Nola strigula*, *Boarmia abietaria*, *Metrocampa margaritata*, *Triphæna subsequa* (one fine specimen), two each of *Aventia flecula*, *Macaria alternata*, *M. liturata* (several), and other common species. I then shifted my quarters, and found *Leucania turca* (very plentiful), *Acronycta ligustri* (2), *Cymatophora duplaris* (1), *Agrotis corticea* (1), and another fine *Triphæna subsequa* (and saw two or three others taken by friends). *Boarmia roboraria*, *Thyatira derasa*, *Calliginea miniata* became quite common, and remained so throughout July, the last two during part of August. By this time *Triphæna fimbria* and *Euplexia lucipara* were fairly plentiful in some places, *Cleora glabraria* (1); *Catocala promissa* (which turned up as early as July 6th) was not common, but *C. sponsa* in fair numbers; *Lithosia helvola* (fairly common). *Gnophria quadra* (very few), *Zonosoma annulata* (several), *Noctua stigmatica* (8), a few on ragwort), *N. baia* (common), *Hydræcia nictitans* (common at ragwort), and others. In September, *Asphalia diluta* (very abundant), *Agrotis suffusa* (several), *A. saucia* (fairly common), *Noctua castanea* (2), *Agriopsis aprilina* (abundant), and others. In October, *Xylina ornithopus* (fairly common), *X. socia* (several), *Calocampa exoleta* (1), *Cerastis vaccinii* and *Scopelosoma satellitia* swarmed on every tree. Captures at light: *Geometra papilionaria* (1, about middle of July). *Camptogramma fluviata* (2, in trap), *Asteroscopus sphinx* (1, on Nov. 23rd). By day: *Stauropus fagi* (1 female, at rest, on June 29th), *Eugonia erosaria* (1), *E. quercinaria* (2). I went several times in search of *Apatura iris* in July, but did not get it until the last week in the month, when in company with Mr. T. A. Mitchell, who took a fair male flying near a stream; this he gave to me; we saw several others the same day: two days later I visited exactly the same spot, and at once captured a fine female in almost perfect condition, and saw again many others: as this was the first specimen that I had netted, I was not a little pleased. *Limenitis sibylla* had been in its usual force, also the large fritillaries; but *Argynnis paphia* v. *valezina* was no doubt commoner than I had ever previously seen it. By larva beating I found *Hylophila prasinana*

(a pest), *Gnophria rubricollis* (abundant), *Dasychira pudibunda* (abundant), *Stauropus fagi* (got several), *Notodonta trepida* (3), *N. chaonia* (6), *N. trimacula* (several), *Moma orion* (plentiful in a favourite locality), *Acronycta alni* (2, full fed), *Panolis piniperda* (common in some places), *Eurymene dolobraria* (abundant), *Amphidasys strataria* (several), *A. betularia* (common), *Zonosoma punctaria* (several) *Cidaria siderata* (abundant), and many others unknown to me.—J. M. ADYE; Jan. 17, 1893.

ON THE MIDDLESEX NORTH BORDER, 1892.—The following notes represent the observations and captures made by me and Mr. C. R. Peers, of Harrow-Weald Rectory, during the past year, and among them will be found perhaps some additional insects to those already recorded by Mr. Cockerell in his Middlesex fauna. My own notes were commenced early in July, when I returned to the neighbourhood to find that the rare and beautiful *Plusia moneta* had, as already recorded (*Entom.* xxv. 193), fallen to the net of Mr. Peers. They close with the record of *C. celerio*, taken in a garden almost immediately adjoining our village churchyard. The twelfth milestone from London is situated about equidistant between the two houses. Harrow-Weald Rectory is built on the gravel; Oxhey Grove on the stiffest London clay. The country is generally well wooded, and there are two fairly large stretches of common land within the radius of our operations. The great majority of the following captures have been made at light, as we have little opportunity for collecting during the day. *P. palpina* turns up again after ten years' absence, and *G. papilionaria* (3 specimens) I have not before met with here. Of the Rhopalocera, *H. thaurus* is new to me in the district, and *C. edusa* has not paid us a visit since 1877 (*cf.* *Entom.* xxv. 209, 282); of *A. euphrosyne* I have, heretofore only, caught a single specimen (Harrow-Weald Common, 1888), but I found it in abundance on June 3rd in Pinner Wood. *V. atalanta* was about early (July 23rd); and a week later (July 29th) I met with *T. quercus* in Oxhey Wood (2 specimens), a butterfly that I have not observed on the Middlesex border since 1876. The same day I saw a single *V. polychloros*. *L. argiolus*, however, seems to have disappeared, though Mr. Peers took it in 1887. On the whole, insects have been remarkably plentiful. Subjoined is a detailed list, comprising in all—Heterocera only—148 species. Mr. Peers' observations commence May 31st (except *A. badiata* and *H. defoliaria*, March) and terminate October 26th. *Sphinges* (3).—*Chærocampa celerio*, *Ino statice*, *L. filipendulæ*. *Bombyces* (18).—*Lithosia complanula*, *Euchelia jacobææ* (larvæ), *Aretia caia*, *A. lubricipeda*, *Porthesia chrysorrhœa*, *P. similis*, *Leucoma salicis* (larva), *Bombyx neustria*, *Odonestis potatoria*, *Drepana lacertinaria*, *D. falcataria*, *D. binaria*, *Cilix glaucata*, *Pterostoma palpina*, *Lophopteryx camelina*, *Asphalia diluta*, *Thyatira batis*, *T. derasa*. *Noctuæ* (68).—*Acronycta pisi*, *A. tridens*, *Diloba cæruleocephala*, *Leucania conigera*, *L. lithargyria*, *L. comma*, *L. impura*, *L. pallens*, *Tapinostola fulva*, *Hydræcia nictitans*, *H. micacea*, *Xylophasia rurea*, *X. lithoxylea*, *X. monoglypha*, *X. hepatica*, *Dipterygia scabriuscula*, *Neuronion popularis*, *Cerigo matura*, *Mamestra brassicæ*, *M. persicariæ*, *Apamea basilinea*, *A. didyma*, *Miana strigilis*, *M. fasciuncula*, *M. bicoloria*, *M. literosa*, *Grammesia trilinea*, *Caradrina morpheus*, *Agrotis saucia*, *A. segetum*, *A. corticea*, *Noctua augur*, *N. plecta*, *N. triangulum*, *N. festiva*, *N. rubi*, *N. umbrosa*, *N. baia*, *N. xanthographa*, *Triphæna ianthina*, *T. pronuba*, *Amphipyra pyramidea*, *A. tragopogonis*, *Mania typica*, *M. maura*, *Tæniocampa gothica*, *Pachnobia leucographa*, *Scopelosoma satellitia*, *Tethea*



subtusa, *Calymnia trapezina*, *C. pyralina*, *C. diffinis*, *C. affinis*, *Dianthœcia cucubali*, *Cleoceris viminalis*, *Miselia oxyacanthæ*, *Euplexia lucipara*, *Phlogophora meticulosa*, *Hadena protea*, *H. oleracea*, *H. thalassina*, *H. genistæ*, *Asteroscopus sphinx*, *Gonopteryx libatrix*, *Plusia chrysitis*, *P. moneta*, *P. iota*, *P. gamma*. *Geometra* (59).—*Urapteryx sambucaria*, *Epione apiciaria*, *Rumia luteolata*, *Metrocampa margaritaria*, *Selenia bilunaria*, *S. lunaria*, *S. tetralunaria*, *Odontopera bidentata*, *Crocallis elinguaris*, *Eugonia querciniaria*, *Himera pennaria*, *Phigalia pedaria*, *Hemerophila abruptaria*, *Boarmia repandata*, *B. gemmaria*, *Geometra papilionaria*, *Hemithea strigata*, *Acidalia dimidiata*, *A. virgularia*, *A. aversata*, *A. remutaria*, *Timandra amataria*, *Cabera pusaria*, *Macaria alternata*, *Halia vauaria*, *Strenia clathrata*, *Abraxas grossulariata*, *Lomaspilis marginata*, *Hybernia defoliaria*, *Oporabia dilutata*, *Larentia viridaria*, *L. didymata*, *Emmelesia alchemillata*, *Eupithecia satyrata*, *E. castigata*, *E. lariciata*, *E. vulgata*, *E. absinthiata*, *E. pumilata*, *E. rectangulata*, *Hypsipetes sordidata*, *Melanthia bicolorata*, *Melanippe rivata*, *M. montanata*, *M. fluctuata*, *Anticlea badiata*, *A. nigrofasciaria*, *Coremia designata*, *C. ferugata*, *C. unidentaria*, *Campptogramma bilineata*, *C. tersata*, *Triphosa dubitata*, *Cidaria miata*, *C. corylata*, *C. immanata*, *C. testata*, *C. fulvata*, *Eubolia limitata*.—H. ROWLAND-BROWN, Oxhey Grove, Harrow-Weald December, 1892.

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## NOTES AND OBSERVATIONS.

In the 'Mark Lane Express' (Dec. 19th) there is an account of a Meeting of the Royal Agricultural Society of England, held on December 7th, 1892, at which Mr. Whitehead is reported to have said "that the question of an appointment of a consulting naturalist had received very careful and lengthy consideration by the Seeds and Plants Committee. They had hoped to have been able to recommend to the Council the appointment of an eminent authority conversant with Zoology as an honorary officer of the Society. One distinguished gentleman had been approached with this object, but he had said that he had not sufficient time to devote to such an office, although he appreciated very highly the honour proposed to be conferred upon him. Upon further consideration the Committee came to the conclusion that it would be impossible to expect to get the services of any such distinguished authority on Zoology; and therefore they resolved to recommend to the Council to appoint, after careful selection, a young man, of course highly educated and having a distinct bent towards zoological knowledge, who might be trained to the practical work of the department. Under these circumstances the Committee made their recommendation to the Council, as the best possible solution of this difficult question. They recognised that it was impossible to get, *per saltum*, an accomplished economic entomologist; and the best plan, therefore, was to get a young man, and induce him, by a fair salary and the prospect of an increment, to devote himself to the study of natural history as applied to agriculture." It is quite possible that no "eminent authority conversant with Zoology" may be inclined to accept the honorary office referred to in the above extract; but is it also a fact that "an accomplished economic entomologist" cannot be found to fill the position at the same remuneration as that proffered to a young man with zoological know-



ledge? In his Presidential Address to the Lancashire and Cheshire Entomological Society (Jan. 9th), Mr. Capper discusses at considerable length the progress of economic Entomology in this country during the past half-century, and remarks that several County Councils have appointed entomologists as lecturers on this subject. In addition to those who have already given evidence of their ability to deal with injurious insects, we must remember that there are many entomologists who possess all the necessary qualifications for the work. Any man, in fact, who is able to work out the life-history of an insect in a thorough manner, and can intelligibly convey the result of his investigations to others, possesses the primary accomplishments of an economic entomologist. In the matters of methods for the prevention of insect attack, and the means of destroying injurious insects, there is a vast amount of information ready to hand, and anyone of ordinary intelligence should easily make himself acquainted with all that it would be useful for him to know on these heads. Remedial or preventive measures that may be effective in one locality, and under certain conditions, might be quite inoperative in another locality and under other conditions; therefore the most suitable treatment can only be ascertained by careful experiment and practice in the field. Is there any reason to suppose that "a young man having a distinct bent towards zoological knowledge" would be better qualified to deal with injurious insects than a practical entomologist?—R. S.

COLEOPHORA METALLICELLA, *Hodgk.*, = *C. FUSCEDINELLA*, *Zell.*—I agree with Dr. Wood, who has most carefully worked out the matter, that the *Coleophora* to which I gave the name of *metallicella* (Entom. xxv. 44), must be merged in *C. fuscadinella*. I sent Dr. Wood a large supply of the larvæ in all stages of growth; they were all found on birch, and not one on elm. This is singular, because Dr. Wood bred his long series from elm. Some of the specimens, in both Dr. Wood's and my own series, are larger and darker than others. The insect I have in my collection, under the name of *C. orbitella*, is nothing but very pale, captured *C. fuscadinella*, and I think the former name will have to sink.—J. B. HODGKINSON; Ashton-on-Ribble.

STAUROPOUS FAGI IN THE READING DISTRICT, 1892.—I started working the beech on the 12th May, and continued to do so till the 20th June, resulting in a total capture of 104 *S. fagi*. The black variety occurred as one in six, and was much more difficult to detect on the tree trunks. The moth always sat with its head pointing directly upwards, with the wings folded "lappet fashion." They ranged from a few inches to ten feet from the ground, but were most numerous between three and five feet; on one occasion only was a climb necessary. The fact of their preferring the smaller trees as a resting place, which I first published in this Journal, was amply confirmed by myself and others. When I left them the species was hardly on the wane, it being taken in some quantity well into July. One or two other facts I noted. Firstly, that it occurred in colonies, a few stragglers only being found outside a limited area; and, secondly, if a female was taken you would usually get a male, or sometimes two or three on the same tree, or within a short distance of it; this of course being due to the female's power of assembling. The ordinary form is, to a practised eye, easily seen on the smooth bark of the beech, at a distance of four to eight yards; but the black ones can only be detected by close inspection,

or by getting the insect in profile. The latter is protected by its assimilation to the dark brownish green, sometimes almost black, colour of the weather-stained trunks. Why then, one asks, do we not find the black form dominant? It occurs to me that the probable explanation is, that at some former period oak prevailed and beech was the exception, the opposite to that which now obtains. The grey coloured, generally accepted type, would, under such conditions, be as much protected by conformation of colour to its environment as the black variety is now. I have concluded that the species in this particular place is in a transition state, *i. e.*, from a less to a more protected form of coloration. That oak may have flourished, where the beech now occupies the ground, is evidenced by the remains of a great tree, whose prime must have passed some two or three centuries since, and that occasional oaks (planted?) still over-top the lofty beeches which surround them. The grey *fagi* of earlier times would have found a secure retreat in the crevices of the grey oak bark, which the smooth and often dark-coloured rind of the beech certainly does not now afford them. *S. fagi*, in its beech wood home, has few natural enemies; birds and other animals likely to prey on it are scarce, and the larva is peculiarly free from the attacks of ichneumons; hence black *fagi* are not likely to supplant the grey just yet. The regular pursuit of it by energetic collectors would accelerate such an event; the grey would go out, and the black, as the fittest, would have the sole chance of perpetuating the race. As bearing on the above, I should like to know if the black form is taken in oak woods, and, if so, in what proportion to the type.—J. CLARKE; Reading, January 8, 1893.

**CUCULLIA VERBASCI BRED IN JANUARY.**—I found, to my astonishment, on the 12th of January, that a fine imago of *Cucullia verbasci* had hatched in the pupa-box. The larva I found on June 24th, and it went down in a few days. Surely this was extremely early, particularly as the box stood in a cold north room without a fire, and the weather was very severe.—JOHN N. STILL; Seaton, Devon.

**COLIAS EDUSA BRED IN JANUARY.**—I have just bred four specimens of *Colias edusa*. The eggs were laid at the end of August, so the insects have been nearly five months in coming to maturity, which is surely far more than the normal time. It was not discovered that there were any larvæ until about the 20th of October, nearly two months after the eggs were laid, and they were then only one-third of an inch long. As soon as noticed they were placed in a warm greenhouse, where they pupated about Dec. 20th, and since then have been kept warmer than they would have been in summer out of doors. When young they lay extended on the top of the clover-leaf, and resembled it so much in colour that they were difficult to find. When full-fed the lateral stripe was a brilliant orange, being composed of a mixture of red and yellow speckled mottlings. I only had six larvæ altogether.—W. M. CHRISTY; Watergate, Emsworth, Hants, Jan. 19, 1893.

**THE EARLIER STAGES OF COLIAS HYALE.**—Upon reading Mr. Williams's notes on the rearing of *C. hyale*, I was somewhat surprised to find that his descriptions of the earlier stages were to some extent erroneous, and, being so, at variance with the descriptions I published (Entom. xxv. p. 271). It is obvious, from the description given by Mr. Williams of the egg of *C. hyale*, that he did not examine it microscopically, and did not examine more



than one specimen. He says the egg (Entom. xxvi. p. 7) "has about fourteen longitudinal ridges, which do not, however, meet at the top, but terminate at the circumference of a small circle, the intervening depressions between the ridges being most delicately reticulated transversely." I closely examined a number of eggs — about eighteen — with both a high and low power, and found the longitudinal keels to vary in number from nineteen to twenty-two, in no case less than nineteen, the average number being twenty-one instead of "fourteen"; the spaces between the keels have a flattened surface, and are most delicately but irregularly *ribbed transversely* by about forty-six in number, and *not "reticulated."* Mr. Williams states "the newly-hatched larva is a greyish green," whereas all the number I examined had the ground colour ochreous-yellow, the dull olive colouring being caused by the minute black warts being so densely sprinkled over the surface; the "minute bristles," alluded to by Mr. Williams, are not bristles, but short club-shaped tubercles. After the first moult the head is olive-green mottled with dark olive-brown, which he describes as having a "light brown appearance, being studded with minute blackish spots," and also "extending down the middle of the back is a *furrow*." Such I entirely failed to detect, as no furrow exists, but simply that part of the surface is devoid of hairs. After the second moult the body is deep clove-green and the head pale ochreous-green, whilst Mr. Williams says "both head and body uniform in colour." For further details relating to the above stages, see Entom. xxv. pp. 271-4.—F. W. FROHAWK; Balham, January, 1893.

LEPIDOPTERA AT LIGHT.—I see, under the above heading (Entom. 15), that Mr. G. B. Routledge corroborates Mr. Arkle's experience in males and females at light. I know of only one exception to the rule, viz., *Bombyx rubi*. The females only of this species come to my trap, although there are hundreds of males flying about the park from 4 p.m. till dusk. I took a female *P. populi* at light on November 24th, 1892; but though I took over a hundred *Anchocelis lunosa* by same means, not one was a female.—T. B. ROBERTSON; Sketty Park, Swansea.

MALE v. FEMALE LEPIDOPTERA AT LIGHT.—The following notes on males v. females at light concern such species as I have frequently met with in the Bristol neighbourhood:—*Dasychira pudibunda*, males abundant every season; proportion to females about 20—1. *Amphidasys prodromaria*, a few males most years; never a female. *Selenia illustraria*, proportion of males to females, 10—1. *Odontoptera bidentata*, males very abundant every May; as many as six on a lamp, sometimes; not one female taken at light. *Crocallis elinguaris*, males also abundant at light; no female recorded. *Ennomos tiliaria*, common; males to females about 30—1. *Tephrosia crepuscularia*, common; males to females about 12—1. *Notodonta dictæoides*, a few males at lamps most years; a female never. The only specimen of *Bombyx rubi* I have ever taken at light was a female; this perhaps was to be expected, as, contrary to the males, the females fly after dusk, I having once taken one fluttering over the herbage at about 9 p.m.—R. M. PRIDEAUX; Ashted, Surrey, Jan. 8, 1893.

CONTRIBUTION TOWARDS A LIST OF THE INSECT FAUNA OF SURREY.—The following list may be of interest as a contribution to the statistics of the fauna of the district south of London. The species enumerated were chiefly taken in the neighbourhood of Kingston, Surrey, including Coombe



Wood and Richmond Park, but one or two are from Croydon and Esher. Of course the chief part of them are well known to occur in Richmond Park. I have compiled the list from the cabinet of my cousin, Dr. H. N. Kane, of Lanherne, Kingston Hill. It makes me exceedingly envious, I confess. *Gnophria quadra* (1), *Arctia villica*, *Dasychira pudibunda*, *Drepana lacertinaria*, *Lophopteryx camelina*, *Notodonta dictæa*, *N. dictæoides*, *N. chaonia* (not very rare), *Asphalia diluta*, *A. flavicornis* (abundant), *Cymatophora* or, *Bryophila muralis*, *Acronycta leporina*, *A. aceris*, *A. megacephala*, *A. auricoma* (several), *Leucania turca*, *Xylophasia hepatica*, *Dipterygia scabriuscula* (pinastri) (abundant), *Luperina cespitis*, *Apamea unanimis*, *Rusina tenebrosa*, *Panolis piniperda* (abundant at Esher), *Pachnobia rubricosa* (very abundant), *Tæniocampa opima*, *T. populeti* (not rare), *T. munda*, *Xanthia fulvago*, *X. gilvago*, *Calymnia pyralina* (1), *Hecatera serena*, *Polia flavicincta*, *Cleoceris viminalis*, *Aplecta nebulosa*, *Hadena advena*, *H. protea*, *H. genistæ* (1), *Xylocampa areola* (= *lithoriza*), *Heliaca tenebrata* (= *arbuti*), ab. (Richmond Park), *Habrostola tripartita* (= *urticæ*), *H. triplasia*, *Catocala nupta* (abundant). *Geometræ*.—*Pericallia syringaria*, *Selenia bilunaria*, *S. lunaria*, *Nyssia hispidaria* (sometimes abundant in Richmond Park), *Amphidasys strataria*, *A. betularia*, *Hemerophila abruptaria*, *Boarmia roboraria* (not very rare), *B. consortaria* (not very rare), *Tephrosia biundularia*, *T. extersaria*, *T. punctulata*, *Geometra papilionaria*, *Larentia viridaria*, *Iodis vernaria*, *Phorodesma bajularia*, *Zonosoma porata*, *Macaria alternata* (Coombe Wood), *M. notata* (Coombe Wood), *M. liturata* (Coombe Wood), *Panagra petrararia*, *Bupalus piniaria*, *Ligdia adustata*, *Hybernia leucophæaria* (very abundant), *H. progemma* (very abundant), *H. defoliaria* (very abundant), *Eupithecia linariata*, *E. pulchellata*, *Lobophora viretata*, *Anticlea badiata* (very abundant), *Cidaria miata*. *Euthemonia russula*, *Epione vespertaria*, *E. apiciaria*, *Melanippe procellata* (specimens of all these from Croydon); *Brephos parthenias*, *Selidosema ericetaria* (= *plumaria*), *B. piniaria* (all from Esher).—W. F. DE V. KANE; Sloperton Lodge, Kingstown, Ireland.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — 18th January, 1893. — *The Sixtieth Annual Meeting*.—Frederick DuCane Godman, Esq., F.R.S., President, in the chair. An Abstract of the Treasurer's accounts having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. After the ballot it was announced that the following gentlemen had been elected as Officers and Council for 1893:—President, Mr. Henry J. Elwes, F.L.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G. Barrett, Mr. Charles J. Gahan, M.A., Mr. F. DuCane Godman, F.R.S., Mr. Frederic Merrifield, Mr. Osbert Salvin, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., and Mr. George H. Verrall. The President then delivered an Address, which, though containing reference to the Society's internal affairs and an allusion to the successful resistance made by naturalists and others to the War

Office scheme for establishing a rifle range in the New Forest, consisted for the most part of full obituary notices of Fellows of the Society who had died during the year, special mention being made of Mr. Henry W. Bates, F.R.S., Professor Hermann C. C. Burmeister, M.D., Dr. Carl A. Dohrn, Mr. H. Berkeley-James, Mr. J. T. Harris, Sir Richard Owen, K.C.B., F.R.S., Mr. Henry T. Stainton, F.R.S., Mr. Howard Vaughan, and Professor J. O. Westwood, M.A., the Hon. Life President. A vote of thanks to the President having been proposed by Lord Walsingham, F.R.S., and seconded by Mr. J. H. Leech, Mr. Godman replied. Dr. D. Sharp, F.R.S., then proposed a vote of thanks to the Secretaries, Treasurer and Librarian, which was seconded by Mr. W. H. B. Fletcher. Mr. McLachlan, Mr. Goss and Canon Fowler then severally replied, and the proceedings terminated.—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*November 25th, 1892.*—C. G. Barrett, F.E.S., President, in the chair. Mr. J. Jenner Weir exhibited *Pyrameis cardui*, L., which he had received from Lurimer County, Colorado, captured at an elevation of upwards of 7,000 ft., and remarked thereon. Mr. R. Adkin, *Zygæna filipendulæ*, L., showing gradations of colour intermediate between the red and yellow forms; also *Peronea rufana*, Schiff. and *P. hastiana*, L. Mr. F. W. Frohawk, a bred series of *Smerinthus tilia*, L., showing variation in extent of markings and depth and hue of colour, one specimen being very red. Mr. R. South, malformed specimens of Lepidoptera, including *Papilio machaon*, L., *Melitæa athalia*, Rott., *Lycæna bellargus*, Rott., *L. icarus*, *Tortrix piceana*, L., and made some observations thereon. Mr. Dennis, a very dark form of *Vanessa cardui*, L., and examples of *Colias edusa*, Fb., bred from ova obtained in August. Mr. H. Williams, pupæ of *C. hyale*, L., reared by him from ova obtained from a captured female. Mr. Tugwell, *Dianthæcia barrettii*, Dbl. Mr. Barrett, on behalf of Mr. Collins, of Warrington, exhibited dark varieties of *Acronycta leporina*, L.

*December 8th.*—The President in the chair. Mr. Frohawk, on behalf of Mr. Merrifield, exhibited specimens of *Pieris napi*, L., *Polyommatus phleas*, L., and *Vanessa atalanta*, L., the pupa having been subjected to various temperatures. Some of the pupæ of the last-named species, which were subjected to a temperature of 45 deg. to 32 deg. for 47 days and then from 6 to 24 days to a temperature of 90 deg. to 54 deg., produced some aberrations, the cold having a tendency to break up the bands, to increase the depth of ground colour, and to produce a suffusion of white scales. Mr. Farren showed four aberrations of *Papilio machaon*, L., a series of very dark brown and black varieties of *Chauliodes charophylllellus*, Göze., and some Nepticulæ pinned with very fine silver pins, and put on strips of soft pith. Mr. South, a specimen of *Eriogaster lanestris*, L. (female), with ova showing between the segments of the abdomen; Mr. South and Mr. Barrett were of opinion that the ova were showing through a transparent membrane, but Mr. Jenner Weir said the ova appeared to have ruptured the integument. Mr. Hawes, the two emergences of *Pieris napi*, L., both bred from the same female; also examples of the same species, the larvæ having been fed on different food-plants, and made some observations as to the effects produced. Mr. Tutt, examples of several species of the genus *Tenio-campa*, which Dr. Chapman had extracted from the pupa-cases in some cases as early as the 25th of October; some remarks were made as to the full development of these and other species which had hibernated as pupa,



Mr. Frohawk, hibernating larvæ of *Carterocephalus palæmon*, Pall. Mr. Elisha, two drawers, one of *Coleophora* and the other of *Nepticula*, with cases labelled to show the time of appearance, food-plant of the larva and locality; Mr. Elisha stated that he had adopted this system for the whole of his collection of the Tineina. Mr. Adkin, on behalf of Mr. Austin, some very fine examples of *C. edusa*, Fb. var. *helice*, Hb., three varieties of *Lycana bellargus*, Rott., all taken at Folkestone. Mr. R. Adkin exhibited Lepidoptera collected by him at Folkestone during his summer holiday, and contributed notes with reference to the species exhibited.

December 22nd.—The President in the chair. Mr. W. H. B. Fletcher exhibited a long series of *Psilura monicha*, L., and said he obtained ova deposited by a normal female in 1887, from Mr. Tate, and by careful selection he had at last obtained a dark race, and had no doubt that in time perfectly black specimens would be produced. The specimens bred in 1888 were nearly all normal; the darkest parents selected from this brood produced banded specimens the following year, and those bred in 1890 were suffused on the outer margin, whilst those of 1891 and 1892 were mostly black. Mr. Tugwell said the black form occurred at West Wickham, and that he had taken it there, showing that the black specimens occur near London. Mr. Adkin pointed out the difference between the genuine British specimens and those from the Continent,—the latter had a smoky brown ground colour, approaching *O. dispar*, whilst the British specimens in many cases were really black. Mr. South supported Mr. Fletcher's remarks as to the production of black specimens at will. The discussion was continued by Messrs. Frohawk and Fenn. Mr. Adkin exhibited *Taniocampa gothica*, and var. *gothicina*, H. S., and contributed notes; and Messrs. Barrett and Tutt also made remarks upon this exhibit. Mr. H. Williams, two males of *Colias hyale*, bred this year, from ova obtained from a female captured at Northfleet last September, and made some observations upon the life-history and the conditions under which they were bred. A discussion ensued, in which Messrs. Hawes, Frohawk, Barrett and Tutt took part, and Mr. Williams was congratulated upon his success, Mr. Barrett remarking that they were the only specimens he knew of that had been bred in this country.—H. W. BARKER and A. SHORT, Hon. Secs.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 11th, 1892.—The following addition to Rule V. was made:—"That corresponding non-resident members be admitted into the Society, paying an annual subscription of 2s. 6d." Mr. Moss exhibited a specimen of *Vanessa atalanta*, having a pale buff border on the under side of the posterior wings, of the same width as the usual red one on the upper side. Mr. Wells, a variable series of *Cerastis vaccinii* from West Wickham. Mr. Rickard, a specimen of *Plusia moneta*, taken at Cambridge in 1890; specimens of *Achæra chameleon*, taken by himself in South Africa; a series of *Ephestia kühniella*, bred from a mill at Cambridge; and some insects which he had found eating moths put into a box to relax; these were pronounced by Dr. Sharp to be larvæ of one of the Muscidæ. Mr. Jones, three varieties of *Nemeophila plantaginis*, one nearly black; they were all more or less crippled, and he gave as his opinion that the abnormal coloration and crippling arose from a common disease. Mr. Farren, long and variable series of *Peronea variegana*, *hastiana*, *schalleriana*, *comparana*, and other Tortrices.



November 25th.—Mr. Bull exhibited a large box of Lepidoptera, collected at Cambridge in July and August. Mr. Farren, some strongly-marked specimens of *Arctia lubricipeda* bred from ova, both parents being var. *radiata*. Mr. Fitzroy, a series of *Xanthia gilvago* and other Noctuae, chiefly taken at Cambridge gas-lamps during September. Mr. Rickard, some beautiful varieties of *Arctia lubricipeda* taken in a garden, and a good pale variety of *Abraxas grossulariata* and a specimen of *Epunda lutulenta*, all from the district. Mr. G. H. Bryan, M.A., read a paper on "Insect-hunting on the Riviera," being an account of five weeks' collecting, from the 22nd March last, at Alassio, Mentone, Hyères, Arles, Nîmes, Avignon, Tarascon, &c., with long lists of Lepidoptera and Coleoptera, &c., captured or observed, and many interesting notes on their habits. The paper was illustrated by an exhibition of several boxes of the specimens collected, the Lepidoptera and Coleoptera being especially well set and in excellent condition.—WM. FARREN, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The Annual Meeting was held on Monday, January 9th, 1893, in the class-room of the Free Public Library, William Brown-street, Liverpool. Mr. S. J. Capper, F.L.S., F.E.S. (President), occupied the chair, and there was a good attendance. A number of interesting exhibits were laid on the table for inspection. The first business was the election of officers for the ensuing year. Mr. Capper was, for the seventeenth time, re-elected to the position of President; Mr. W. E. Sharp was appointed Vice-President; Mr. F. N. Pierce, F.E.S., Honorary Secretary and Treasurer; and Mr. C. H. H. Walker, Librarian. Mr. Walker, on behalf of the members of the Society, said it was his pleasing duty to ask Mr. Capper to accept a handsome gold-mounted silver case containing a pair of gold entomological forceps. The Society congratulated itself upon having again Mr. Capper as its President. During the sixteen years he had presided over them, he had sought only the advancement of the Society, and had encouraged the members to take an interest in their studies. They therefore desired to inaugurate that session by doing something more than merely thanking Mr. Capper for his past services; and they offered this slight token of regard, knowing that it would occupy an honoured place amongst his valuable collection. Mr. Capper, in acknowledging the gift, said that he thoroughly appreciated the kindness of the members, and would in future, as in the past, do all he could to benefit the Society. Before proceeding to deliver his presidential address, he referred to the death of Prof. Westwood. The President exhibited a melanic variety of *Timandra amataria*; the specimen was unicolorous soft olive-green. Mr. Gregson, a collection of autographs of naturalists, artists, and authors, including nearly all the entomologists of the last fifty years. Mr. Walker, a drawer of varieties of *Vanessa antiopa* from North America, probably the finest lot of varieties of this species extant. Mr. Collins, *Stauropus fagi* from Reading. Mr. Mosley, set of educational cases of Natural History, to be used as prizes at schools. Mr. Newstead, a specimen of *Vanessa antiopa*, captured in Cheshire in 1877 by Mr. Leather, of Vale Royal.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—December 12th, 1892.—Mr. R. C. Bradley in the chair. The following were exhibited:—By Mr. E. W. Wynn, one *Acronycta alni*, bred from a larva found at Knowle; also *Lithosia complana*, taken at Bewdley. Mr. C. J. Wainwright, *Isopogon*

*brevirostris* and *Neoctamus cyanurus* from Barmouth; and *Machimus atricapillus*, from Brendon, Devonshire. Mr. R. C. Bradley, *Chrysoclysta bimaculella*, *C. linnælla*, *Stigmonota nitidana*, and *S. regiana*, all from Sutton. A paper upon "Secondary Sexual Characters in Insects" was communicated by Mr. J. W. Tutt, and read by the Secretary, Mr. C. J. Wainwright.

January 16th, 1893.—Mr. W. G. Blatch, President, in the chair. A lecture was delivered by Col. Chas. Swinhoe, upon "Protective Resemblance and Mimicry in Insects." In the course of the lecture, which was illustrated by photographic lantern-slides, some of which were beautifully coloured, he gave a number of cases and facts of mimicry which were quite new and very interesting.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—November 9th, 1892.—Mr. G. C. Dennis, President, in the chair. Mr. R. Dutton exhibited ten bred specimens of *Acronycta alni* from Marlow; *Dianthæcia conspersa*, *Chesias obliquaria*, *Eupithecia togata*, and *Cleora lichenea*, from Kenley. Mr. W. Hewett, *Plusia festuæ* (bred), *Polia chi* and *Larentia cæsiata*, from Bolton in Lancashire; large examples of *Lycæna icarus*, from Galway; and *Trichiura cratægi* (bred), from larvæ obtained at York.

December 14th.—Mr. W. R. Robinson in the chair. Mr. J. Hawkins exhibited a specimen of *Colias edusa*, taken within a mile of the cathedral, York. Mr. R. Dutton, *Epunda lutulenta*, Castle Moreton; *Noctua sobrina*, Aberdeen; specimens of *Dasyampa rubiginea*, Buckereil; *Lithosia sericea*, Manchester; *Psodos coracina*, Rannoch; and a specimen of *Callimorpha hera*, taken in South Devon, 1892. Mr. W. Hewett, *Colias edusa*, four specimens of the var. *helice*, taken at Erith, Kent, 1877; *Selenia lunaria* (bred), from Forres and Essex; *Himera pennaria*, York and Kent; *Selenia illustraria* (bred), summer brood, Worthing; dark forms of *Odontoptera bidentata*, from Forres; *Eupithecia helveticata*, Perthshire; *Halia brunneata*, *Larentia ruficinctata*, *Acronycta myrica*, *Cymatophora duplaris*, *Aplecta tineta*, *Anarta cordigera*, and *Phibalapteryx lapidata*, from Rannoch; *Dianthæcia capsophila* (bred), Kirk Michael, Isle of Man; *Acronycta strigosa*, Cambridgeshire, and *Xanthia silago*, from Acomb churchyard, York (of Horsforth). Mr. W. Mansbridge, F.E.S., then gave a highly interesting and instructive lecture on the early development of Lepidoptera, and illustrated the lecture by numerous diagrams, most of which had been prepared from dissections made by himself. Mr. Mansbridge dealt with the structure of the egg, and traced the various stages in the development of lepidopterous larvæ, and exhibited several very striking varieties of *Abraxas grossulariata* bred from larvæ collected in the neighbourhood of Horsforth; also some fine examples of *Polia chi* and var. *olivacea*, selected from a great number of specimens taken by him during the last two seasons, in the neighbourhood of Horsforth, Yorkshire.—WILLIAM HEWETT, *Hon. Sec.*

NOTTINGHAM AMATEUR ENTOMOLOGICAL SOCIETY.—The first Annual Meeting was held on the first Monday in October, 1892. Weekly meetings will continue to be held every Monday night, at 8 o'clock, in the Society's Room, Morley House, Mansfield Road, Nottingham. The object of the Society is to work up the entomology of the county of Nottingham, and to place on record facts relating thereto.—W. FERRIS, *Hon. Sec.*



## RECENT LITERATURE.

*Beetles, Butterflies, Moths and other Insects ; a brief Introduction to their Collection and Preservation.* By A. W. KAPPEL, F.Z.S., F.E.S., Assistant Librarian Linnean Society, and W. EGMONT KIRBY. With 12 coloured plates ; and woodcuts. London: Cassell & Co., 1892. Sm. 4to, pp. 182.

THE little book before us, by two authors whose names we have not previously noticed, makes no scientific pretensions, but is, as the authors tell us, intended as an introductory book for young people in the country who take an interest in the natural objects with which they are surrounded. A considerable number of the more interesting British species of all Orders (with now and then an occasional continental species of special interest) are recognisably and sometimes excellently represented on the plates, which appear to us to be rather better than the average of those commonly met with in cheap elementary works of this kind. The letterpress is not confined to the species figured, but is especially full as regards the British butterflies, most of which are described, except a few of the rarer and less conspicuous species. Of course more space is given to the Coleoptera and Lepidoptera than to the less conspicuous and therefore less attractive Orders ; but this is always the case in works intended to have a circulation among those who are not making a special study of Entomology. The remaining Orders, however, have not been neglected, and the book probably contains nearly as much information about them as its readers are likely to require or expect as a commencement. We wish this first venture of the authors every success. It seems well adapted either for a first book of country Entomology, or as a cheap and attractive gift-book for young people with a taste for Natural History.

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*Catalogue of Eastern and Australian Lepidoptera-Heterocera in the Collection of the Oxford University Museum.* By Col. C. SWINHÖE, F.Z.S., &c. Part I. Sphinges and Bombyces. With eight coloured plates. Oxford, 1892. Pp. viii, 324.

THE entomological collection of the Oxford Museum is probably the second public one in the kingdom, being only surpassed in extent and value by that of the British Museum ; and Col. Swinhoe has done good service by publishing a work in which a large number of Walker's types are determined, and many figured. The author has also taken the opportunity to describe several new genera and species ; the former are generally illustrated by woodcuts of neurulation, and a considerable proportion of the latter are figured on the plates.

Owing to the vast number of existing species, and the difficulty of determining them by descriptions only, even if the descriptions are good and the species are assigned to their right genera, good figures are of immense service to the entomologist. We will not go so far as to say with M. Oberthür that all descriptions unaccompanied by figures ought to be rejected, for we think that the work of every author



ought to be respected; but we do say that a figure, unless so bad as to be quite misleading, is generally more useful than even the best description; though a good description is also necessary for pointing out the characteristics, and especially the affinities of a species. And even a bad coloured figure (provided always that it is not actually misleading) is often more useful to a lepidopterist than a good plain one.

In the work before us, which deals chiefly with large species, the moths are all represented of the natural size. Unless insects are so small that their markings cannot be reproduced, we think it is a pity to publish enlarged figures. This is sometimes done on the Continent with *Pyralidæ* and other moths, which would look far more natural, and whose markings would come out with equal clearness, if they were not enlarged.

The present volume includes only *Sphinges* and *Bombyces*; and we understand that two more will be needed to complete the work. Col. Swinhoe has followed a somewhat different arrangement from Mr. Kirby, and has included the *Ægeriidæ* and *Cymatophoridæ* in the *Bombyces*. The *Uraniidæ*, *Cocytidæ*, *Castniidæ* and *Agaristidæ*, are placed in the middle of the volume, and the genus *Epicopeia*, included by Mr. Butler in the *Liparidæ* (or, as Col. Swinhoe prefers to call them, *Lymantriidæ*), and by most other authors in the *Chalcosiidæ*, is here formed into a distinct subfamily of *Zygænidæ*, following the *Chalcosiidæ*. The new family *Eupterotidæ*, just proposed by Mr. Hampson, has likewise been adopted.

We are glad to be able cordially to recommend this useful book to the notice of entomologists, though it is to be regretted that several serious misprints in the spelling of proper names occur, such as "Hearsay" for "Hearsey, and "Moëlleri" for "Möllerli."

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## OBITUARY.

PROFESSOR VEIT GRABER died at Rome on the 3rd March last. He had been for some years Professor of Zoology at Czernowitz, but in the autumn of 1891 he was found to be suffering from serious illness, and was advised to travel in the South for the benefit of his health: but his malady making rapid progress, he died and was buried away from home. Graber was best known to entomologists in this country by his book 'Die Insecten,' published in three volumes in 1878. It is in many respects the best introductory work on the subject that has yet been published. Graber's greatest work was accomplished in the departments of embryology, anatomy and physiology. His writings on the embryology of insects and on points connected therewith, have been both numerous and extensive, and have gained him a world-wide reputation; his labours on the organs of hearing in insects have been scarcely less important. He was only 47 years of age, and his premature decease is a serious loss to entomology.

D. S.

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ERRATUM. — Page 14, for "Riesenwetter" read "Kiesenwetter" throughout.

# THE ENTOMOLOGIST.

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## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A.

Member of the Royal Irish Academy; Fellow of the Ent. Soc. of London.

### PREFACE.

THE investigation and accurate record of the lepidopterous fauna of Ireland has become of late years a matter of increasing interest from a scientific point of view. It is almost unnecessary to point out that this country presents certain well-marked features possessed by none other in Europe. Firstly, in the even temperature which it enjoys, contrasting with that of Scandinavia and Northern Europe including England, in the moderate amount of summer sunshine, as well as the mildness of its winter, in which latter it differs widely also from Scotland. Secondly, in its insularity and western position, being separated from Great Britain and the Continent by a breadth of sea sufficient to prohibit the immigration of all but the most strong-winged and wandering species (and then only under the disadvantage of an easterly wind) from admixture with its indigenous races. A third characteristic is that of a heavy rainfall, exceeding on an average that of the rest of Great Britain, if we except the Scilly Islands, part of South-west of England, and the English Lake District; and perhaps a part of Scotland. These peculiarities, in view of the active enquiries now being pursued especially in relation to colour-variation in this subdivision of the animal kingdom, make it of primary importance to secure an accurate diagnosis of the indigenous species of Ireland, and of the particular characteristics, both individually and collectively, which they present. An accurate examination of the fauna and flora of Ireland, whenever we are in possession of a more precise knowledge of them, will probably also throw convergent light on its geological history, and offer independent testimony confirmatory of its former connection with Great Britain and the European continent. Alfred Russel

Wallace, in his 'Island Life,' puts the matter most pertinently and concisely when he points out how "such unimportant facts as the presence of certain types of plants and animals in one island rather than in another, are now shown to be dependent on the long series of past geological changes,—on those marvellous astronomical revolutions which cause a periodic variation of terrestrial climates, and on the endlessly varied actions and reactions of organized beings on each other. . . . We are thus encouraged to study more completely every detail, and every anomaly in the distribution of living things; in firm conviction that by so doing we shall obtain a further and clearer insight into the course of nature." Unfortunately, the want of Irish investigators precludes the possibility of adequately dealing with the subject at the present date; and the difficulty of accumulating sufficient reliable information to warrant it, has deterred me for several years past from attempting to publish my scanty contribution to entomological science.

However, even if after the lapse of so many years since the publication of Mr. Birchall's Catalogue the additions may seem but scanty, yet the issue of a revised list is fully justified by the necessity of eliminating a number of erroneous records which I find had been incorporated into it, a service which lapse of time would eventually have rendered impossible. It is a difficult thing to prove a negative. These errors mainly arose from the incautious publication of unverified statements collected from various sources, without personal examination of the original specimens referred to, an omission which, in every case possible, I have done my utmost to supplement. I am, therefore, assured that my late friend Mr. Birchall, who some ten years ago confided to me the task of revising his Irish Catalogue, would heartily concur in weeding out all doubtful entries, leaving to future workers the task of building up a fuller and reliable record, though Ireland is not likely soon to produce a rival to the "Father of Irish Entomology," as he may well be called, in strenuous research. None but such an indefatigable worker as he could have accomplished so much in so short a time. The present list, therefore, will contain no item which does not rest on my own personal guarantee, or upon that of Mr. Birchall himself (so far as can be ascertained, as below indicated), or upon the identification of the specimens by Mr. C. G. Barrett, the Rev. J. G. Greene, or other competent entomologist of repute. The original list of Micro-Lepidoptera drawn up by Mr. Barrett, and incorporated with Mr. Birchall's Catalogue, has been kindly revised and augmented by him, with such additions as have been latterly added by further researches. I have found much difficulty in certain instances among the Macro-Lepidoptera in deciding whether certain species appearing in Mr. Birchall's Catalogue without particular locality affixed were inserted on his own know-



ledge, or on mere heresay. Those which I have still retained, with some hesitation, are, however, sufficiently indicated by the absence of any distinct locality. This difficulty would not have arisen if my acquaintance with Mr. Birchall had commenced before a period when his failing health precluded the possibility of taxing his memory with such details, and it was distressing to see his anxiety to communicate the intelligence with which his mind was stored, and to assist more fully in the revision which he was desirous to accomplish, but which, except in some instances, was beyond his strength to undertake. He frequently expressed a wish to modify his overstatements of the abundance of many of the species, which has led to frequent comments by later collectors. It is true that formerly the seasons were much more favourable to entomological success, and the summers warmer, so that insects which Mr. Birchall then took in numbers may have diminished in late years, or have not been captured owing to adverse climatic conditions. Even if this be so, a considerable discount must be made in a revised Catalogue if a just representation of the present relative numerical proportions of species is to be put forward, and a fair comparison drawn between the lepidopterous fauna of Ireland and that of other countries. Such statements have been therefore modified and corrected, so far as information personal or other is available, in the present list. To those who may object that the excision of species has been carried too far, I desire, without going into particulars, shortly to explain that I am in a position to justify myself in the great majority of instances by MS. evidence, which fortunately came into my hands; as well as in many other cases by personally assuring myself of the incorrect identification of specimens. In another class of records I have the concurrence of Mr. Barrett in deleting species, whether of probable or improbable occurrence, which have not, since the publication of Mr. Birchall's Catalogue in 1866, been taken in Ireland; as I prefer to secure, as far as possible under the circumstances, an accurate scientific basis upon which future observers may build. Mr. Birchall adopted a more liberal view, as stated in his preface, being "unwilling to reject any reputed indigenous species which could be retained with the least show of reason." This attitude he justified by pointing out that "though the observations of the late Dr. Ball and Mr. Tardy are in many cases still unconfirmed, it proves in my judgment not the absence of the insect, but the want of observers." In this I fully concur, and some of Dr. Ball's records have since been justified, though the want of localities rendered them, to all intents and purposes, unavailable as evidence; but in the case of Mr. Tardy's captures no information could be gained, his cabinet of British Lepidoptera not having been labelled, and no written memoranda extant, a deplorable loss of

skilled observation in Wicklow. The present Catalogue, therefore, is now offered to the public as a very incomplete instalment, and has been based upon that of Mr. Birchall; and the preface cannot be better concluded than by his own words, "the sooner it becomes obsolete, the better will its purpose be answered."

"Enough if something from our hands have power  
To live and act, and serve the future hour."

My acknowledgments are due to the small band of entomologists, and others interested in Natural History pursuits in Ireland, for much valuable information and assistance. The researches of Mrs. Battersby and Miss Reynell in Westmeath; Mr. Russ at the interesting hill of Knocknarea, and the shores of L. Gill, Sligo; of the Rev. James Bristow and Mr. Watts about Belfast and the Co. Down, and Antrim; the Messrs. Campbell near Derry; and Mr. Donovan in the Co. Cork, have been invaluable. In addition I have to express my especial indebtedness to Colonel Cooper, of Markree Castle, Co. Sligo; and to the late Lord Farnham, Lords Howth, Powerscourt, Kenmare, and other noblemen and gentlemen, who have in various ways afforded facilities for research in their forests and demesnes. My thanks are also due to many of our leading English entomologists for advice and access to their valuable collections, notably the late F. Bond, Mr. Barrett, Mr. South, Mr. Jenner Weir, Mr. Tutt, Mr. Adkin, Mr. Tugwell, and many other correspondents.

#### LOCALITIES AND CAPTORS' NAMES.

Localities such as "Cappagh," "Favour Royal," "Killynnon," are intended to include the neighbourhood within a circuit of about three miles radius; but in the case of towns and cities embrace a wider range. The following, however, may be more particularly defined:—"Sligo" includes the shores of L. Gill and the district about Knocknarea; "Markree" includes the deer park, woods, and district about Collooney and Ballysodare; "Farnham" includes likewise the shores of L. Oughter, from Killykeen to Killeshandra; "Derry" refers chiefly to the portion of Inishowen, Co. Donegal, including Ballinagard, Kilderry, and Culmore, lying for about five miles along the western shore of L. Foyle. The initials of the captor, as given below, are appended for the most part to the localities given for all interesting species. Such as are given without initials are records supplied by myself.

- A..... J. E. R. Allen; Galway.  
 B. .... Edwin Birchall (the late).  
 C. G. B. .... Charles G. Barrett, F.E.S., &c.  
 Mrs. B. .... Mrs. Battersby; Cromlyn, Rathowen, Westmeath.

<i>Dr. B.</i> .....	Dr. W. E. Battersby; Glendalough, Caragh Lake, Co. Kerry.
<i>Ball</i> .....	Dr. Ball (the late); Curator of the Nat. Hist. Museum, Trin. Coll., Dublin.
<i>Br.</i> .....	The Rev. S. L. Brakey; Trory Glebe, Co. Fermanagh.
<i>Bw.</i> .....	The Rev. Jas. Bristow; Belfast.
<i>Miss G.-B.</i> ...	Miss Gore-Booth; of Lissadell, Co. Sligo.
<i>Miss C.</i> .....	Miss Cooper; of Markree Castle, Co. Sligo.
<i>C.</i> .....	The Messrs. Campbell; Ballinagard House, near Derry.
<i>R.-C.</i> .....	E. Roper-Curzon.
<i>D.</i> .....	Charles Donovan; Union Hall, Co. Cork.
<i>Miss ff.</i> .....	Miss ffolliott; Hollybrook, near Boyle, Co. Roscommon.
<i>M. F.</i> .....	Maurice Fitzgibbon; Kilrock House, Howth.
<i>S. R. F.</i> .....	Stephen R. Fetherston-H.; Dublin.
<i>Greene</i> .....	The Rev. Joseph Greene; Rostrevor, Clifton.
<i>Gr.</i> .....	P. Grierson; Cloudalkin, Co. Dublin.
<i>B.-H.</i> .....	G. E. H. Barrett-Hamilton; Kilmannock House, Co. Wexford.
<i>Holt</i> .....	T. R. Holt; Indian Civil Service; formerly Trin. Coll., Dublin.
<i>G. V. H.</i> .....	George V. Hart, LL.D., &c.; Howth.
<i>W. E. H.</i> .....	William E. Hart; Kilderry, near Derry.
<i>J.</i> .....	Rev. W. F. Johnson; Armagh.
<i>K.</i> .....	W. F. de V. Kane. (All localities for Macro-Lepidoptera standing without initials of the captor annexed, the writer is himself responsible for.)
<i>Hon. E. L.</i> ...	The Hon. Emily Lawless; Maritimo, Blackrock.
<i>L.</i> .....	C. and G. Longfield; Desertserges Rectory, near Bandon, Co. Cork.
<i>M.</i> .....	C. B. Moffat; Ballyhyland, Enniscorthy.
<i>M'C.</i> .....	Rev. R. M'Clean; Sligo.
<i>A. G. M.</i> .....	A. G. More, F.L.S.; late Curator Museum Science and Art, Dublin.
<i>Miss N.</i> .....	Miss Nugent; formerly of Ardahan, Co. Galway.
<i>F. N.</i> .....	Frank Neale; Limerick.
<i>Russ</i> .....	Percy G. Russ; Culleenamore, Sligo.
<i>Miss R.</i> .....	Miss Reynell; Killynon, Killucan, Westmeath.
<i>E. S.</i> .....	Eland Shaw; formerly of Dublin.
<i>S.</i> .....	F. W. Sinclair (the late); Trin. Coll., Dublin.
<i>T.</i> .....	W. Talbot. (Captures published in the 'Entomologist' from time to time, but not identified by the writer.)
<i>C. T.</i> .....	Charles Townsend.
<i>U.</i> .....	Richard J. Ussher, J.P.; Cappagh House, Co. Waterford.
<i>Miss V.</i> .....	Miss K. Vernon; Clontarf Castle, Co. Dublin.
<i>Lt. W.</i> .....	Lieut. Walker, R.N.; formerly H.M.S. 'Hawk.'
<i>W.</i> .....	Charles W. Watts; Belfast.

(To be continued.)



## SOME REMINISCENCES OF THE LATE PROF. WESTWOOD.

By REV. O. P. CAMBRIDGE.

AMONG the various obituary notices of the late Prof. Westwood, perhaps that by Mr. McLachlan, in the February number of the 'Entomologist's Monthly Magazine,' p. 49, gives one the best idea of his versatile genius; but I have not seen anywhere any allusion to one of his most noted accomplishments,—the mending of broken insects. I have seen him with his little pot of dirty gum, a bit of an old match, two or three needles and pins, and a paper of the veriest *fragments* of an insect, and in a brief space of time the insect would appear built up in a most marvellous way, almost defying the power of any ordinary pocket-lens to discover that it had ever been otherwise. I remember once, however, finding the Professor's assistant, many years ago, carefully collecting and lightly affixing fragments of numerous insects from an entomological drawer to a sheet of paper. On enquiring what this was for, he said that by-and-bye the Professor would restore each bit to its proper insect throughout the drawer. Presently the Professor walked in, confirmed this statement, and at once set to work with his gum-pot and other implements. I ventured to hint at the chances of some insects obtaining bits to which by nature they might not have been entitled, and so tending to confuse future entomologists. He repudiated the idea with scorn, and, full of confidence in himself, proceeded with his labours. I think this was the secret of his general success in life, as well as in mending insects,—abundance of self-confidence; and, after all, though it might result, as it did, in the instance mentioned by Mr. McLachlan, in mistaking a crushed cockroach of tender age for a gigantic new flea, yet it is a quality without which very little really good or original work is ever done. If future students of the Hope collection of insects should find anything queer in the structure of some of the specimens, it would hardly be inexplicable; but they must not think worse of the dear old Professor than his friends did in the matter of the flea; while if no such results of his mendings should ever reveal themselves, it will be the best possible evidence of his accurate knowledge of varied insect structure, as well as of his dexterous manipulation of insect fragments.

Mr. McLachlan remarks on the Professor's lack of any *sense of humour*. I could illustrate this by several amusing stories; but I will only mention one, in which, it seems to me, that his confidence in himself is also very notable. I was visiting the Museum one summer's afternoon, many years ago, when the Professor informed me that he had a lecture on the next morning, and asked whether I would care to attend it. The subject

(insects injurious to gardens) was a popular one, and he expected a good audience. Ten minutes before the hour of the lecture next day I duly appeared at the lecture-room, where I found the Professor completing his arrangements, and making a final disposition of his beautiful drawings and specimens. We remained there chatting for some little time, but no students or other audience appeared. Half an hour passed; still no arrivals. But the Professor was hopeful (was he not *Hope* Professor? but such a horrible joke could not occur to *him*): "They will come presently; they are often rather late." A gentle knock is heard at the door at last. "Come in;" but no one coming in, the Professor goes to the door. "Is this Professor Westwood's lecture-room?" asks a little timid voice. "Yes, ma'am; we are all waiting." And the Professor returns, followed by a little, rather elderly, frightened-looking lady, who is duly placed in a front seat; whereupon, without moving a muscle of his countenance, the Professor begins, and goes through an excellent and interesting lecture, with this little old lady as his whole audience; for it was only by being employed in assisting him with his drawings and specimens that I could restrain myself from exploding at the absurdity of the whole thing. First and last the Professor was as serious as if the whole University were before him. If he had had even the smallest sense of humour, he must have exploded. After the lecture he merely remarked: "Oh, I daresay there is some cricket match going on to-day; some of the undergraduates do take an interest in Entomology, but there is always boating or cricket going on." I was informed later, from other sources, that the Professor's lectures were not unfrequently attended (or rather *not* attended) as on the occasion mentioned.

It must not be imagined for a moment that in recording these little "items" I desire to speak lightly of the Professor. Some of the most enjoyable hours of frequent visits to Oxford, many years ago, were passed in entomological work in his rooms at the Museum, as well as in his own house; and I never experienced at his hands anything but the readiest and most abundant courtesy, hospitality, and help.

He was, I fancy, about the last survivor of the older generation of entomologists. There may be abler specialists among the present generation, but none, I suspect, who will command more universal regard, either as a man or a scientist, than my old and valued friend J. O. Westwood.

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## CLOSTERA ANACHORETA.

BY REV. JOSEPH GREENE, M.A.

I FEEL sure that you will allow me to reply (as shortly as possible) to Dr. Knaggs' charges against me in the matter of *C. anachoreta*.

Firstly, I must express my regret at the half-hearted manner in which he accepts my strong disclaimer of imputing to him any share in what I thought then, and think still, was a dishonest transaction. As Dr. Knaggs modestly expresses his belief that few of the modern entomologists can have any knowledge of him, then surely the explicit and unreserved statement of one who *has* had that knowledge ought to be sufficient for this and any future generation. Dr. Knaggs opens the campaign by asserting, in somewhat queer language, that certain recorded facts omitted by me are in themselves sufficient to "completely knock the bottom out of his theory." I would ask him whether he clearly understands my theory, or, as I prefer to call it, my argument? He conveniently avoids all mention of my summary under this head, and I must therefore ask my readers to carefully peruse it, commencing with the words, "I said," &c., p. 42. He then proceeds to give the omissions on which he relies.

No. 1.—"This beautiful larva," &c. I ask, what on earth has it to say to my argument? Are the italicized words intended to convey the fact that, in confinement, the larva of *C. anachoreta* will eat sawfly when it cannot get poplar? Possibly; but as it is, as I believe, universally admitted that its food, in a state of nature, is poplar, the statement of Mr. Norman that he found one pupa under *willow* bark (not sawfly) either proves nothing, or, if it proves anything, it is only to lend a certain amount of probability to my supposition that he might possibly have mistaken the species. Further, what are we to gather from the words in small capitals? Is it that Mr. Cooper, who "believes" that his larva was feeding on sawfly, was the first discoverer of the insect, and not Dr. Knaggs? Then has the whole entomological world laboured under a false conviction for thirty-four years, since, in 1859, Dr. Knaggs announced the discovery of it by himself ('Zoologist,' vol. xvii. p. 673); also in the 'Transactions of the Ent. Soc. of London' (vol. v., new series, p. 77). But, whatever it may mean, how does it affect my argument? But I have not quite done with this omission. Having given the quotation from the 'Zoologist,' he goes on to say, "The remainder is omitted, because it is quite irrelevant to the question." Here we are at direct issue. The words ("omitted" by Dr. Knaggs) seem to me very relevant indeed, and are as follow: "The two localities given for the insects are certainly calculated



(if not designed) to lead our assiduous larva-hunters astray; in the 'neighbourhood of London' is literally untrue; 'home counties' is within the verge of truth, but conveys no idea whatever of the exact truth."

*Omission 2.*—The comments following on this omission are beyond me. No. 1 seems to amount to this: *C. anachoreta*, on good (to me) grounds, is suspected of being imported; but, if so, *C. curtula* and *C. reclusa*, feeding on the same tree, must have been imported too.—Q. E. D. The second comment I pass by, as having no bearing whatever on the matter, further than to (apparently) imply that Dr. Knaggs doubts the sincerity of my disclaimer as to his being, in any way, mixed up with what I considered to be a fraud.

*Omission 3.*—Again I am at fault. "According to Mr. Greene's reasoning, the reply would be that *C. anachoreta*, being a foreigner, died out from sheer inability to acclimatize itself (precisely), and that *C. curtula* and *C. reclusa* . . . Mr. Greene has not suggested any separate theory as to their disappearance." Why should I? What has their disappearance to say to the matter? I do not, for a moment, deny the fact. But when Dr. Knaggs claims, and justly, that the same causes which produced the disappearance of *C. curtula* and *reclusa* and *N. dictæa* and *ziczac*, also caused "the vanishing of *C. anachoreta*," he suddenly stops short, and misses or ignores the whole force of my argument. Having shown that certain causes effected the disappearance of the five species mentioned above, he must, in order to be consistent and "logical," be prepared to prove that the *results* were the same in each case. Let us consider those results. *C. curtula* and the three other species are still to the fore in abundance all over the country, and I have no doubt have continued to appear annually, since 1863, within a few hundred yards of the scene of extirpation. But, *C. anachoreta*? I must now quote myself: "Is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home-breeding ceased) that no record of its capture, either as imago, pupa, or larva can be found up to the present time, a period of twenty-three years"? This statement may be said to have been never (practically) refuted. True, Dr. Knaggs says that "captures have been recorded from Deal and from Walmer"; but he gives no date and no authority. The more than inference to be drawn from the above comparison of the *results* upon the five species will, I trust, be obvious to my readers. I will now sum up, as succinctly as possible, the whole matter from my own point of view.

The history of *C. anachoreta* may be divided into three periods,—past, present, and future. Past.—The following is an extract from the passage already referred to ('Transactions,' &c.): "The only reputed British examples of this species (*anachoreta*)

hitherto known are contained in the British Museum collection, and were obtained by the late Dr. Leach from the collection of Mr. Spratt; so many years having elapsed without the occurrence of other specimens, its claim to rank as a British insect has been almost universally disputed, and the present capture may, therefore, be looked upon as a re-discovery." Thus it will be seen that, so far as the "past" is concerned, up to 1859, the only claim that *anachoreta* had to be considered a British species consisted in the fact that in the British Museum were two specimens captured, "many years" before, by no one knows whom, or when, or where. We come then to the "present," by which I mean the period of Dr. Knaggs' discovery. Suddenly, after the lapse of "so many years," he announces the discovery of the famous eleven larvæ. It is unnecessary to dwell further here upon the "present" history, as it will be found in full in my paper, by those who care to read it. Then as to its "future," *i. e.*, from 1864 up to date. In broad terms I assert that it has *disappeared*. As to the two cases mentioned by Messrs. Norman and Harbour, I attach no value to them; and with regard in particular to that of Mr. Norman (of whom I may say "that I have not the pleasure of knowing him either personally or by correspondence, or even by sight") I would observe only, that when so experienced a dealer as the late Mr. Weaver, and a still more experienced and well-known amateur naturalist actually mistook a specimen of *C. reclusa* for *C. anachoreta*, it was not an unfair suggestion that Mr. Norman might also have been in error as to the species he bred from his solitary pupa. But I cheerfully give Dr. Knaggs the benefit of these two, and a dozen more isolated cases, if he can produce them. My point is in no way appreciably affected thereby. I am aware that, during recent years, occasional records have been given of breeding the insect, but they have generally been accompanied by "from foreign ova."

Finally, Dr. Knaggs concludes his remarks with a somewhat peremptory statement that it must be "obvious," from the omissions cited, that my inferences have been drawn from "wrong premisses." I will be equally explicit, and say that the "omissions" on which he relies have no bearing whatever on the subject; and that now, after ten more years' experience, I am more than ever convinced that *C. anachoreta* is not an indigenous British species, nor is that conviction likely to be altered in these days of unblushing importation.

Rostrevor, Clifton, Bristol.

PS.—Under the "first omission," Dr. Knaggs writes, "There is no recorded evidence of his (Mr. Cooper's) having collected there in 1859; . . . but I am open to correction." Then, in an N.B., "Mr. Cooper has since given his locality as Saltwood, an



inland locality about six miles from Folkestone" (Entom. p. 112, 1888). Upon referring to the above, I find the statement as given by Dr. Knaggs to be correct, except that he "omits" the *very* important point that Mr. Cooper expressly states that he found these larvæ in 1859!

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CLOSTERA ANACHORETA.—Dr. Knaggs has been for so many years upon the entomological retired list, that it is no wonder he has not earlier replied to Mr. Greene. Will he further kindly say whether, in those bygone days, he ever attempted to diffuse *C. anachoreta* by the establishment of outlying colonies? He is reported to have done so at Deal; and specimens from there, even so late as ten years ago, may be the outcome of some such an effort. With regard to the original captures, the supposition was, of course, that the larvæ or ova were introduced with the young trees. But it is not policy to plant trees in full leaf, and I doubt whether any of the insects named would deposit sufficient eggs upon a *stem* to ensure a brood in the summer. Moreover, years ago I was at some trouble to ascertain whence the trees and shrubs were derived, and ultimately traced them to the late Mr. Masters, whose nursery plantations were almost world-renowned for varieties of forest and ornamental trees. We might then have expected to obtain *C. anachoreta* at Canterbury, which should have been its head-quarters; but I have never heard of its occurrence so far inland, from which I assume that, from whatever source the parents were derived, the balsam poplars had nothing to do with it. In 1888, a single example of *C. anachoreta* (and a variety too) was bred from a cocoon found upon a wall at the back of the Folkestone Road, Dover. Certainly no one had been breeding the insect in the town for many years, if ever, and there had been no young trees planted for five and twenty years within larval reach of the spot. I cordially unite with Dr. Knaggs in regretting that, at the present day, doubts are thrown broadcast upon almost every specimen captured in the past.—SYDNEY WEBB; Maidstone House, Dover.

I should like to add a few words to Dr. Knaggs' interesting note on this species (Entom. 40). On reading the Rev. J. Greene's second article (Entom. xxi. 31), I thought it would be desirable to ascertain some particulars of the planting of these plantations, and accordingly I asked the assistance of Folkestone entomologists for this purpose (Entom. xxi. 90). In reply, Mr. Austen wrote to me that, after considerable trouble, he had ascertained that the trees were supplied from a nursery garden at Ashford. This disposes of the idea of *anachoreta* being imported from abroad with the trees. I may add that I frequently searched the young poplars in Mr. Gibbon's nursery garden at the back of the old windmill, as well as those at the foot of the Dover Hill, and others in the neighbourhood, but without finding a trace of *anachoreta*. —C. A. BRIGGS; 55, Lincoln's Inn Fields, February 14, 1893.

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THE WEST INDIAN SPECIES OF *CEROPLASTES*.

BY T. D. A. COCKERELL.

THE Coccid genus *Ceroplastes*, Gray, consists of fourteen described species, of which one is European, one Egyptian, one South African, one from Réunion, one East Indian, one Australian, and the rest American. It is best developed in the neotropical region, although two species occur in Florida, and one of them in Louisiana; as well as a reputed new species in Alabama, and another new species (*C. artemisiæ*, Riley MS., *nec* Rossi) in New Mexico.\*

The West Indian species, if we include some new ones, are eight in number, as at present known, and may be ranged in four groups.

## GROUP 1.

*Ceroplastes cassiæ*, Chavannes, 1848.

Mr. C. A. Barber sent me specimens of a very fine species, which he had found on *Bursera gummifera* at Antigua. At first I thought the insect was undescribed, but on further examination it does not seem distinct from *C. cassiæ*, which was described from Brazil. The scales are large, about 5 mm. long, excluding the spine, somewhat shiny, red-brown in colour, but partly or entirely covered with yellowish white secretion. The wax is thick, and, at least in the adult, there are no distinct lateral plates. Several specimens are often more or less massed together. The caudal horn or spine is stout and very distinct.

*C. fairmairei*, Targ., 1868, from Montivideo, belongs to the same group, but is not known from the W. Indies.

## GROUP 2.

*Ceroplastes floridensis*, Comstock, 1881.

There is a large *Ficus* in the back yard of the Museum in Kingston, Jamaica, on which this species abounds. It is not found in masses, or gregarious, but occurs most often singly on the upper side of a leaf, either at the distal end of the leaf-stalk or somewhere on the midrib.

It is noteworthy that in many examples of *C. floridensis* the white secretion of the central plate is not in the centre of it, as in other species, but placed to one side. This character, however, is not invariable, and it may be due to parasites. Although I have reared no parasites from the Jamaican *C. floridensis*, many specimens show holes where they have escaped. A single specimen on *Adiantum*, either *C. floridensis* or closely allied, also shows the middle nucleus of secretion placed quite to one side.

\* See 'Amer. Nat.,' May, 1881; 'Insect Life,' vol. iii. p. 398; Howard, 'Descr. N. Amer. Chalcididæ,' 1885, p. 18.

The *Adiantum* scale is referred only with doubt to *floridensis*, because it seems probable that we have a second species of this group in Jamaica, living on ferns. On February 20th, 1892, Dr. H. Strachan gave me some scales found in Kingston on a tree fern. Of these I noted: length 4, breadth 3, height  $2\frac{1}{2}$  mill.; colour pale grey, juveniles white. The shape suggests *cirripediformis*, but the apex white, not ringed with dark. This is surely the same insect as that doubtfully referred to *C. vinsoni* in 'Timehri,' Dec. 1889, p. 312, found in British Guiana on ferns. I do not think it is *C. vinsoni*, but will not venture to describe it as a new species.

### GROUP 3.

*Ceroplastes cirripediformis*, Comstock, 1881.

I found many specimens of this on *Solanum* in Kingston, Jamaica; always on the stems, never on the leaves. The *Solanum* is a large species, with edible fruit, known as soushumber. Mr. Barber sent me a young specimen found on *Eranthemum* at Antigua, which seemed in all things identical with *cirripediformis*.

*C. psidii*, Chav., and *C. jancirensis*, Gray, are two supposed species from Brazil. Judging from the published figures and descriptions, they are hardly to be separated, as Signoret surmises. They are also evidently very close to *C. cirripediformis*.

*Ceroplastes jamaicensis*, A. White, 1846.

Found by Gosse at Basin-Spring, Jamaica, and quite insufficiently described by White. So far as the description goes, it indicates a species very similar to *C. cirripediformis* and *C. psidii*.

*Ceroplastes depressus*, n. sp.

♀ Scale: long. 5, lat. about 5, alt. 2 mm.

Near to *cirripediformis*, but flatter, larger, and circular, or nearly so; one end more or less truncate. Central area oval, dark purplish brown, with an apparent minute white point, due to a white light on a shiny surface. After this, proceeding outwards, a ring of whitish or dull white, and then an obscure purplish ring, from which radiate purplish lines (2 each side, and 2 at one end) on a greyish ground. Chalky white marks round the margin obscure. Under side dark red.

Found by Mrs. E. M. Swainson at Kingston, Jamaica, under the bark of a *lignum-vitæ* tree, June 2nd, 1892, in company with *Icerya rosæ*, R. & H. From it I bred a parasite, kindly identified for me, by Mr. L. O. Howard, as *Comys albicoxa*, Ashmead.

Further specimens, of various ages, are needed to complete the description; but the shape and external characters will sufficiently indicate the species. It is evidently a derivative of the *psidii*-group, adapted for living under bark.

*Ceroplastes plumbaginis*, n. sp.

Antigua; on *Plumbago capensis* (C. A. Barber).

*Egg*.—Elongate-oval, pale pink.

*Newly-hatched larva*.—Caudal filaments long, nearly as long as body, curved, with the convexity outwards, so that they cross one another. Claw with large curved digitules, and tarsus with the usual two clubbed hairs rather strong and thick. The legs bear a few very strong bristles, the largest being apparently on the trochanter. Segmentation distinct. Antennæ with last joint emitting some long hairs, the last of which is at least as long as the whole antenna.

The young larva of *cirripediformis* is said, by Comstock, to be "very slender, dark brown," whereas this larva is yellowish, and broad, with about the outline of *Lecanium hesperidum*. Internal to each caudal filament is a short hair or bristle; these are called by Comstock, in his description of *C. floridensis*, the bristles of the caudal lobes.

*Larva*.—Has thirteen lateral tufts in all; whereas *cirripediformis* is stated by Comstock to have fifteen.

*Adult* ♀.—Much resembles *cirripediformis* in appearance, but is unusually high. Length 4, lat. 3, alt. 3 mm. Colour much like *cirripediformis*, summit with a light dorsal patch (the dorsal patch of larva) very small, and surrounded by dark colour. This again broadly surrounded with whitish, and outside this a dark reddish ring (in some specimens obsolete). This dark ring is due to the thinness or absence of the wax at this point. The lateral plates are distinct, and near their lower edges are some conspicuous patches of chalky white secretion. There are two lateral plates on each side, each with its central tubercle, and one at each end, making six in all. However, the anal plate is evidently two joined together, as Comstock remarks of *cirripediformis*. The pink eggs are conspicuous underneath the female.

This species, like others of the same group, lives upon the twigs and branches, not upon the leaves.

When the specimens arrived from Antigua, I found among them a small Coccinellid beetle, which Mr. Schwarz has kindly identified for me as *Scymnus ochroderus* var. *cyanipennis*, Muls. No doubt it is predaceous upon the *Ceroplastes*.

*Ceroplastes denudatus*, n. sp.

Antigua; on Sour Sop (*Anona muricata*). Collected by Mr. C. A. Barber.

Abundant, clustered on the twigs like *Lecanium hemisphaericum*, which it resembles closely. Very few on leaves, and these on the under side, mostly at base. The size and shape of the scales are like *L. hemisphaericum*, and in age they become almost entirely bare of wax, and resemble in colour the paler specimens of *hemisphaericum*. The length of a scale is one-eighth of an inch.

The old *hemisphaericum*-like scales are, however, seen to have at the summit the elongate whitish patch of *Ceroplastes*, and some bright white patches remain round the margin. The scales which have not lost the wax are dull pinkish white, with the dorsal patch broadly margined with brown-pink; and the lateral plates, somewhat broader than long, with their central white patches or knobs similarly margined.

The species is allied to *cirripediformis*. It might be confounded with *janeirensis*, but it is smaller than that scale.



The specimens sent from Antigua were badly attacked by the larvæ of some moth, probably a *Phycid*, so that many of their characters could not easily be made out.

#### GROUP 4.

##### *Ceroplastes utilis*, n. sp.

Island of Grand Turk. Collected by Dr. H. Strachan.

On a tree or bush not identified, with brownish grey bark, and small entire or slightly crenate leaves with oblique bases. On a branch, 4 mm. diam., is a mass of white wax surrounding it, with a diam. of about 1 cm. The mass is about 28 cm. long. This is composed of Coccids, embedded in wax: one (with its wax), separated from the mass, is about 7 mill. long, 5 broad, and 4 high. Beneath, the insect itself appears dark brown, and is about 4 mill. long, oval in outline. Above, there is a depression in the wax, in the middle of which can be seen a small narrow-oval tubercle, corresponding to the central tubercle of other species of the genus. When the wax is removed the insect is dark brown, convex, about the shape of *C. cirripediformis*, except that the apex is raised and pointed, and the lateral knobs are inclined to be likewise, especially at one extremity. Seen by transmitted light the scale is blood-red, becoming yellow on the sides. Boiled in soda they turn it madder-pink, and the wax is deposited on the sides of the test-tube. The young, as seen deposited in this wax, are nearly colourless or pale brown, with dark brown legs and posterior cleft. They are oval in outline, and resemble the young of *Lecanium*. The posterior cleft is very distinct and wide. A very long hair arises from the last joint of the antennæ. The legs and antennæ extend considerably beyond the margin of the body. The edges of the posterior cleft emit two long filaments, which slightly diverge from one another. There is a rather short caudal stylus. Mouth parts distinct; rostral filaments not extending to end of body. Second pair of legs nearer to third pair than to first. Claws with knobbed digitules. Antennæ apparently of six joints; third longest, then sixth; second not longer than fourth.

Adult female shiny, sides strongly wrinkled; apparently no legs or antennæ.

If this species could be obtained in abundance, the wax might be of commercial value. *C. ceriferus*, Anders., which apparently produces much less wax, has been utilised, the product being known as "Indian White Wax."\*

Institute of Jamaica, Kingston, Jamaica, Dec. 9, 1892.

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## THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. PERRY COSTE, B.Sc. (Lond.), F.C.S., F.L.S.

(Continued from p. 5.)

### IV.—EFFECT OF OTHER POTASSIUM AND OF SODIUM SALTS.

Now, although I had from the first attributed the cyanide-reaction, produced by KCN, to the cyanogen radicle in that compound, yet it might have been legitimately objected that at least

\* See Spon's Encycl., vol. ii. (1882), p. 2045.

I ought to try whether any reaction took place with other potassium salts. It so happened that last year, after the earlier portion of these experiments—but before the main bulk—had been made (my attention having been for some months diverted to other work), I saw in the 'Entomological Record' for 1891 (p. 201-2) a note by Mr. J. Warren, who stated that a friend of his had observed *potassium chloride* to redden *G. rhamni*. This timely reminder resolved me to lose no more time in systematically working out this subject.

I accordingly instituted a series of experiments with potassium salts. About one dozen and a half salts were taken, and each was tested with at least two yellow species. Here, again, the results were, without exception, negative. Potassium, except in combination with cyanogen, seems to produce no reddening of yellow wings.

Since the analogies of potassium and sodium are so clear, it seemed worth while to make a parallel series of experiments with sodium salts. Eleven different salts were taken and tested, with wholly negative results, except in one instance, that of *sodium arsenate*, the consideration of which I, for the moment, defer. Putting on one side this exception (which, as will appear directly, belongs to quite another category), we find that sodium salts, other than the cyanide, are quite inactive.\*

#### V.—EFFECT OF LITHIUM SALTS.

Having investigated the reactions of compounds of these two common alkalis (to say nothing of their analogues, the ammonium salts), I thought it would be very interesting to ascertain what could be done with salts of a rarer alkali. The salt chosen to be tested was *lithium sulphate*, and here at last a reaction was found to occur; for when wings of *Terias nicippe* and of *Colias edusa* were placed on damp  $\text{Li}_2 \text{SO}_4$  a very marked colour-change was found to occur. The wing was not altered to red as in the cyanide experiments, nor was the reaction that did occur so rapid as with cyanide; but after a time the surface of the  $\text{Li}_2 \text{SO}_4$  either round the wing or, still more, underneath it, was found to be dyed a beautiful purple-pink colour. The action seemed to be this,—that the yellow pigment was slowly extracted from the wing, and at the same time, or immediately afterwards, reacted with the lithium sulphate to form the purple-pink colour. This clue was followed up, and a number of yellow and also of chestnut species subjected to the action of lithium sulphate. The result was that whilst most of the Pieridæ yielding the red cyanide reaction also gave this purple-pink lithium salts reaction, in no case was this obtained from species that do not react with the cyanide. Fur-

\* I should add, however, that these sodium experiments were by no means as full as I should have wished them to be; but I hope next season to make further experiments with sodium salts.

thermore, out and away the best lithium results were obtained with the orange wing of *G. cleopatra*, which had also afforded so fine a cyanide-reaction; for, in this instance, in the course of some two or three weeks' exposure, the whole mass of the lithium sulphate was found to be dyed purple-pink. It is noticeable that this reaction is more marked with orange species, *e.g.*, *Terias nicippe*, *C. edusa*, *G. cleopatra* (fore wing, male), than with the merely yellow; clearly the natural orange is one stage nearer to this artificial purple-pink\* than are the yellows. This entirely accords with the views already expressed as to the genealogy of these colours.

It was thought interesting to determine whether the same reaction could be obtained with other salts of lithium, and accordingly a few experiments were made with the chloride. This was found, however, to be, physically, so unsuitable a reagent, that it was quickly abandoned. It is proposed, however, to further investigate this subject by experimenting with other lithium compounds.

These lithium results gave a new aspect to this work, and, indeed, seemed at first only to confuse such notions as one had previously formed. Before hazarding any opinion on the phenomenon, it was clearly necessary to determine whether this reaction were confined to the lithium salts, or whether it would be obtained from others also. This led to several of the experiments with sodium salts, and while it was found, as previously stated, that the majority of them were without any action, in one case there was a positive result; for sodium arsenate, tested with *G. cleopatra*, showed a very faint pink tinge. The pink was very faint, it is true, and, although noticed within seven days from the commencement of the experiment, it was found no more marked after a further exposure of two weeks. With the exceptions, therefore, of sodic arsenate and lithium sulphate, no other alkaline salts have been found to give this purple-pink reaction.

(To be concluded.)

## CAPTURES AND FIELD REPORTS.

*COLIAS EDUSA* IN NOVEMBER.—Not having seen any record of *Colias edusa* in November, I thought it might be of interest to state that I captured my last specimen on Nov. 3rd, at Littlehampton. It was a small male, and in fine condition, I should think having emerged that day.—PERCY J. LATHY; Bexley Heath, Jan. 26, 1893.

*CNETHOCAMPA PITYOCAMPA*, *Schiff.*—I saw some nests of the larvæ of this destructive species yesterday, near a place called Saint-Pancrace, about

\* The colour was exceedingly like that of an alkaline solution of phenolphthalein.



six miles or so north of Nice. On examining one of the silken pouches, which are spun up in the branches of the pine trees, I found the caterpillars rather less than a third full-fed. These larvæ hybernate. *Cnethocampa pityocampa* lives on different kinds of pines—*Pinus sylvestris*, *P. maritima*, and *P. pinea*. I have not noticed the caterpillars (which are exceedingly common) so abundant near the town as in the country.—F. BROMILOW; Nice, S. France, Dec. 29, 1892.

Thera firmata and Anticlea derivata recorded in error.—I have to apologise to you and your readers for having, in my note of Sept. 3rd, 1892 (Entom. xxv. 310), stated that amongst the miscellaneous captures taken by me at Bognor were *Thera firmata* and *Anticlea derivata*; both of these I unfortunately wrongly identified, as kindly pointed out to me by Mr. Prout. The supposed *Thera firmata* is *Ellopija fasciaria*, and my *Anticlea derivata* is really *Anticlea rubidata*.—HERBERT C. GENTRY; Marian House, Goulton Road, Jan. 3, 1893.

RE-OCCURRENCE IN BRITAIN OF CATOCALA ELECTA, Bkh. — In the 'Entomologist,' vol. viii. pp. 282—3, is to be found an account, by Mr. A. C. Vine, of the capture of an example of this handsome moth, which he took at sugar in the neighbourhood of Brighton on September 24th, 1875. The species was then new to Britain, and as it was apparently not met with during the next sixteen years, this is the only record of its occurrence in the British Isles. I am greatly delighted, therefore, to be able to contribute a note on the capture of a second British specimen, as I had the good fortune to take one here, inside our walled garden, on September 12th last; it had found its way into one of the "traps," which we always use for trying to attract the numerous flies and wasps away from the ripe peaches. On first catching a glimpse of it, I had no idea what a prize was within my reach, for, until it was taken out of the trap and its peculiar markings became visible, my impression was that it must be *Catocala nupta*, of which the only two examples that I had ever met with were caught in a similar trap in our garden in September, 1875. As it was clear that it could not be that insect, I procured continental specimens of *C. electa* with which to compare it, and found that it was identical with them. Although the moth has "seen better days," its condition is by no means bad, except as regards the right hind wing, which is unfortunately far from perfect. It is most satisfactory to be able to chronicle the fact that all the five British representatives of the genus *Catocala* have now occurred in the county of Dorset.—EUSTACE R. BANKES; The Rectory, Corfe Castle, Dorset, February 6, 1893.

NYSSIA HISPIDARIA IN NORTH STAFFORDSHIRE.—As *N. hispidaria* is new to our North Staffordshire list, you may perhaps think it worth while to record the breeding of four specimens, three males and one female, from larvæ beaten by me from oak in May last year, in this neighbourhood.—F. C. WOODFORDE; Market Drayton, Salop, February 12, 1893.

AMPHIDASYs BETULARIA VAR. DOUBLEDAYARIA IN STAFFORDSHIRE.—In July, 1890, I captured a moth at Abbot's Bromley which I was unable to name. The other day it was identified as being the black variety of *A. betularia*. It is a large specimen, measuring  $2\frac{3}{4}$  inches.—(Miss) M. WILSON; Guilden Morden Vicarage, Royston, Cambs., February 9, 1893.

COLLECTING AT BOURNEMOUTH, 1892.—*Saturnia pavonia*, plentiful on heath in May. *Bombyx rubi*, abundant; bred about 40. On May 24th

I took eight *Colias edusa*, five males, several very large and in good condition. On same date *Vanessa cardui*, abundant in lucerne field and in good condition. On June 4th I had the good luck to take a perfect specimen of *Deiopeia pulchella* at Southbourne, on the edge of a field of young wheat. On June 14th my friend Mr. Hooker took 48 *Emydia cribrum* at Ringwood. In September we took about 130 *Colias edusa*, including 14 of the var. *helice*. The first week in October we took 14 *Sphinx convolvuli* hovering over *Nicotiana affinis*. October 16th we took a good specimen of *Dasyampa rubiginea* from ivy blossom. Being our third season, we have been fairly successful. — WM. BOYWOOD DAVIS; Bournemouth.

#### NOTES ON LEPIDOPTERA IN THE BLOXWORTH DISTRICT IN 1892.—

Although rather late in the day, the following list of Lepidoptera, taken for the most part in and near Bloxworth, Dorset, in the past season, may perhaps still be of interest. Among the Rhopalocera none were very abundant; of *Argynnis paphia* a fair sprinkling, and of *A. euphrosyne* fewer than usual. Even *Vanessa urticae* was not abundant, while *E. janira* was decidedly scarce. *Colias edusa* appeared in some numbers early in June, but the later summer brood—though numerically more plentiful—was not in anything like the abundance recorded in numbers of other districts. *Lycæna ægon*, often almost swarming on the heath, was by no means common. *Nemeobius lucina* occurred in fair quantity in its usual localities. Among the Heterocera the following, among many others, occurred:—*Macroglossa fuciformis*, several. *Hepialus hectus*, in unusual abundance. *Saturnia pavonia*, more common than usual on the heath. *Notodonta dromedarius*, larva on alder; *N. trepida*, larva on oak. *Tapienostola fulva*, at dusk in a swamp. *Noctua ditrapezium*, six at sugar, on two nights in July, in fine condition. *Tryphæna orbona* (subsequa, Hb.), at sugar. *Scopelosoma satellitia*, abundant at sugar. *Tethea subtusa*, beat from sallow. *Agriopis aprilina*, abundant at sugar. *Miselia oxyacanthæ*, at sugar. *Xylina socia* (petrificata), a few at sugar. *Plusia gamma*, unusually scarce. *Schrankia turfosalis*, in bogs and swamps in abundance. *Nemoria viridata*, not scarce. *Abraxas grossulariata*, not at all common. *Lomasipilis marginata*, unusually abundant. *Emmelesia alchemillata*, scarce; *E. affinitata*, rather abundant, but local; *E. unifasciata*, one specimen. *Eupithecia dodoneata*, not scarce. *Phibalapteryx vitalbata*, one specimen. *Leioptilus microdactylus* and *L. tephrodactylus*, rare. *Acipitilia paludum*, scarce, but the few specimens obtained were unusually fine. *Mimaseophilus zophodactylus*, frequent. *Crambus uliginosellus*, unusually abundant. *Rhodophea advenella*, one specimen, just out, beat from whitethorn. *Tortrix cratægana*, several among oak. *Peronea rufana*, several among sallow; *P. umbrana*, at ivy bloom in September. *Dictyopteryx forskaleana*, abundant, especially on and near a large maple tree. *Diluta semifasciana*, scarce, among sallow. *Penthina fuligana*, not scarce. *Eriopsela fractifasciana*, abundant, but very local on heath. *Sciaphila sinuana*, occasional, but scarce. *Phoxopteryx siculana*, several, among willows, &c., in a marshy spot. *Grapholitha geminana* (Stephens), very abundant among bilberry. *Olindia ulmana*, scarce. *Stigmonota perlepidana*, abundant in one locality. *Dicrorampha acuminatana*, occasional. *Catoptria albersana*, rare. *Eupæcilia geyeriana*, much scarcer than in the preceding year; from some cause or other the food-plant, *Pedicularia palustris*, almost disappeared: *E. rupicola*, not rare in swamps; *E. notuluna*, scarce, in boggy places. *Lobesia*



*reliquana*, abundant in oak underwoods. *Argyrolepis subbaumanniana*, abundant in one chalky locality. *Tinea albipunctella*, occasional; *T. nigripunctella*, rare. *Phylloporia bistrigella*, not rare, among birch underwood. *Lampronia luzella*, rare in woods. *L. praelatella*, abundant in the same same spots as *L. luzella*. *Micropteryx mansuetella*, very abundant. *Nemotois minimellus*, occasional. *Plutella cruciferarum*, abundant, but not by any means the pest it appears to have been in many other districts. *Cerostoma sylvestra*, usually in fair numbers—it has been very scarce in the past season; *C. alpella*, not scarce; *C. lucella*, scarce, but in precisely the same spot as in past seasons. *Pteroxia mucronella*, a single specimen only. *Psoricoptera gibbosella*, although looked for, was not found, where in a former year it was abundant. *Argyritis pictella*, abundant on the Chesil Beach, Portland. *Aphodia bifractella*, scarce. *Ergatis ericinella*, one only; in some seasons abundant on the heath. *Cleodora cytiselis*, occasional. *Glyphipteryx schænicolella*; from a similar number of rush heads, gathered in 1891 and 1892, numerous specimens were bred in the former, but only two in the latter, year. *Tinagma betule*, fairly abundant, but in nothing like the numbers of the preceding year. *Gracilaria elongella*, occasional both in birch and oak woods, and in an alder swamp; *G. imperialella*, one, in fine condition, swept among low herbage in a swampy place, on the 22nd of August; this is only its second record in the county of Dorset, one having been taken at Glanville's Wootton by the late Mr. J. C. Dale, May 25th, 1840. *Coleophora discordella*, abundant. *Bedellia somnulentella*, bred freely from larvæ mining the leaves of *Convolvulus major*; they leave the mine readily, and quickly eat their way in again between the two surfaces of the leaf: the moths come out at intervals from the end of September to the end of November; several were caught on the wing in a wood, and one was beat from a hedge on Lodmoor, Weymouth. *Cosmopteryx orichalcella*; two were swept among low herbage in a wood, on July 7th and 9th; one was in excellent condition, one worn: this is its first record in the county of Dorset. *Chauliodes illigerellus*, abundant. *Laverna lacteella*, frequent; *L. rhamniella*, scarce. *Chrysoclista schrankella*, abundant. *Asychna terminella*, occasional. *Antispila pfeifferella*, one beat from dogwood (abundant at Portland, but not before noted here); *A. treitschkiella*, two bred from dogwood. *Stephensia brunnichella*, eight, swept, mostly in fine condition, from June 1st to 11th. *Elachista magnificella*, several, swept, in good condition, July 30th to August 18th; *E. gleichenella*, abundant, near the end of June; *E. albifrontella*, very plentiful; *E. cinereopunctella*, very plentiful in one locality, at the end of May; *E. luticomella*, frequent, from the 10th to the end of June; *E. monticola*, abundant; *E. megerlella*, two, on August 4th; *E. paludum*, not scarce, from June 1st to end of August; *E. triatomea*, one only, but it was late in the season before its locality was found. *E. pollinariella*, one, new to this district, but not rare at Portland. *Lithocolletis anderidæ*: I did not succeed in breeding a single one this year out of 1226 mines in birch leaves—from these, however, there emerged 293 *L. ulmifoliella*, but very few ichneumons; in 1891, 630 mines produced 8 *L. anderidæ*, 150 *L. ulmifoliella*, and crowds of ichneumons. *L. cavella*, a few bred from birch mines; *L. nicellii*, ten bred from about thirty mines in hazel leaves, and several beat from underwood; *L. schrieberella*, one bred from elm, new to this district. *Cemistoma lotella*, local, but the mines were observed in several fresh localities, and two moths were swept. *Bucculatrix nigricomella*, very abundant. *Nepticula intimella*, several bred from birch and



sallow bushes; *N. tityrella*, bred from beech; *N. prunetorum*, bred from sloe; *N. alnetella*, two, beat from alders. *Bohemannia quadrimaculella*, six beat from alder, in fine condition, July 26th to August 21st. — (Rev.) O. P. CAMBRIDGE; Bloxworth Rectory, Jan. 31, 1893.

COLEOPTERA IN THE OXFORD DISTRICT.—I have to record the capture of the following Coleoptera (Geodephaga) during 1892: — *Lebia chlorocephala*, amongst grass at Cowley, near Oxford. *Dyschirius æneus*, two examples at Cowley. *Clivina collaris*, in dung near Oxford. *Oodes helopoides*, half-a-dozen specimens from under the bark of willows, near the Cherwell. *Panagæus crux-major*, near Shotover, under stones. *Calosoma inquisitor*, two examples in Bagley Wood. *Cychrus rostratus*, several examples from under dead leaves, and in rotten stumps near Oxford. *Badister unipustulatus* and *B. bipustulatus*, at Cowley, in company with *Taphria vivalis*. *Bembidium lunatum*, one specimen was taken in flood refuse near the confluence of the Cherwell and Thames. The male and female of *Brachinus crepitans* were taken in cop. at Cowley. — JOHN W. SHIPP; Assistant to the late Prof. Westwood.

NOTES FROM ITALY. — After sending my report from Certosa di Pesio (Entom. xxv. 261) a new brood of *Pieris napi*, L., ab. *Napææ*, E., appeared in the meadows. *P. daphidice*, L., was also to be taken, the specimens being freshly emerged. *L. telicanus*, Hb., also became common in the Certosa neighbourhood. *Spilothyrus althææ*, Hb., was not uncommon towards the middle of September. *Colias edusa* and var. *helice* were common and fresh, as was *C. hyale*, L. I tried "sugar" in the grounds of the hotel—an ideal sugaring-ground of large extent, encircled by a high wall, containing a great variety of timber and bordering on the forests clothing the mountain sides: the first attempt was made on the 5th of September, and continued nightly for about three weeks. A good many insects were taken; among them several fine examples of *Catocala fracini*, L., the largest measuring four inches and one-tenth in expanse. The only available beer to use in the manufacture of the "sugar" was bottled beer; the sweets were supplied by lump sugar, and rum at 7½d. the liqueur glass; then I had no poisoning bottle or chip boxes, so that each insect had to be taken in the net and pinched previous to pinning in a collecting-box. However, the results were satisfactory, and I must await my return to England to determine several of the captures. At San Dalmazzo di Tenda, which I should think would make a capital centre for collecting during the summer, I took, during the one day I remained there, several fine specimens of *Lycana bætica*, L. *L. telicanus*, Hb., was very common on flowers of *Aster amellus*; and fairly fresh specimens of *Limenitis camilla*, F., *Satyrus hermione*, *S. circe*, *S. statilinus*, and *S. semele* were on the wing, and quantities of *Colias edusa* and var. *helice*, Hb., together with *C. hyale*, enlivened the rocky hill-sides. At Bordighera, where I arrived on the 1st of October, I found *L. bætica*, L., fairly common, especially in some fields near the mouth of the Nervia; the females depositing their eggs on the flowers, fruit, or, more rarely, the leaves, of *Medicago sativa*. *L. telicanus* was also common, and the two insects continued on the wing, in sheltered spots, where flowers of *Inula viscosa* abounded, throughout October. Some males of *L. bætica* were thickly powdered with bright blue hairs, and some females measured nearly an inch and a half in expanse. On the sea-sands flowers of *Pancratium maritimum*, L., so attractive to moths, still

lingered, as did blossoms of *Vitex agnus-castus*, and were haunted by the "tailed" blues. Other rare plants in flower were *Sternbergia lutea*, *Plumbago europæa*, *Muscari parviflorum*, *Crocus medius*; the only known localities being the grassy summits of a few of the higher mountains along this coast for this last, and near F'inal marina *Campanula isophylla*; so, as will be seen, those who arrive early in the autumn find many very interesting and lovely botanical rarities, as well as insects. I forgot to mention that *Syrichthus fritillum*, Hb., var. *alveus*, Hb., is still to be caught in sheltered nooks, and that *Deiopeia pulchella*, L., was rather common during the second week in October along the coast. I had noticed specimens of this insect in the same places last May. It becomes quickly ragged and torn, from its habit of plunging into the thistles that grow on the shores.—FRANK B. NORRIS; October 31, 1892.

## NOTES AND OBSERVATIONS.

NOTES ON EUPÆCILIA GEYERIANA AND CEMIOSTOMA LOTELLA.—*Eupæcilia geyeriana* appears to be an instance of what has been thought, in many other cases, to be "double-broodedness." Previously I had only met with this insect in August, but during the season of 1892 I took eight fine specimens on the 25th of May; fifteen on the 30th of May, in company with Mr. Eustace Bankes, and a few others shortly after; also several on different days during June, and one on the 15th of July. In August it appeared again in larger numbers, but scarce compared with the previous year, when the food-plant (which had almost disappeared in 1892) was in profusion. Mr. Richardson, again, found the larvæ in a plant I sent to him on the 5th of July, 1892. From my own and Mr. Richardson's observations (see Proc. Dorset Nat. Hist. and Antiq. Field Club, xiii. p. 173) it appears that some of the larvæ, hatched probably in June and July from the May insects, remain throughout the winter in the decayed seeds or stems of their food-plant, and emerge to form the following scattered May, June and July brood, and from this brood proceed the more compact August brood of perfect insects, as well as the hybernating larvæ which produce the following May and June brood. This process can scarcely be properly called "double-brooded," though it is very probably the case also with many other so-called "double-brooded" moths. It can hardly be that the August brood should produce larvæ, as by that time the plant has died down and all signs of life have disappeared. In the volume above cited, Mr. Richardson has a coloured plate illustrating this moth, as well as its larva and food-plants, from Mrs. Richardson's beautiful drawings. The larva has not, I believe, been either figured or described before. The following somewhat similar facts relating to the pretty little moth, *Cemiostoma lotella*, may not perhaps be generally known:—In August, 1891, I bred it freely from a lot of mines found in *Lotus major*, in July; and from the same lot there emerged seven moths, on the 29th and 30th of May, 1892. From larvæ or pupæ thus hybernating, and emerging in spring, it seems then almost certain that the summer brood arises. Unless it had been bred as above noted, it would be most natural, on finding the perfect insects in the month of May, to conclude it to be distinctly double-brooded, much as in the case of *Eupæcilia geyeriana* mentioned above.—(Rev.) O. P. CAMBRIDGE; Bloxworth Rectory, Wareham, Dorset.



VANESSA ATALANTA, &c, IN THE SOUTH OF FRANCE. — At this time of the year there are few species of Lepidoptera to be seen on the wing, even in this favoured district. *Pieris brassicae* is no longer to be met with, though the pupæ of this pest of the kitchen-garden (in the larval state, that is to say) simply swarms on palings, outhouses, &c. Only the other day I saw clusters under the cornices of a gate-post. *Vanessa atalanta* may be noticed all the year round, freshly emerged from the chrysalis; though individuals are also to be seen, in poor condition, during the winter and spring months as well. On the 18th inst., in the country, a short distance out of Nice, I observed a solitary *V. atalanta* disporting itself among the trees on the hill-side. It seemed to be playing "hide-and-seek" with the sunlight glinting through the foliage. It may also be seen in warm spots, even on the outskirts of the town. I may add that I found a very small larva on *Parietaria officinalis* (pellitory) this morning. No doubt it would be interesting to hear the experiences of collectors in other parts, in this connection. Of course I cannot say whether the species occurs during the winter, throughout the whole Riviera region; but, at any rate, I do not expect it flies, at this season, north of the Alps. — F. BROMILOW; "Avalon," St. Maurice, Nice, S. France, Dec. 21, 1892.

ABERRATION OF POLYOMMATUS ALCIPHON *var. gordius*, *Stgr.* — Last summer I was fortunate enough to capture two remarkable varieties of *P. gordius* in the Alpes-Maritimes, and not far from the Italian frontier. The two specimens, which are now in my collection, are females. This form has fewer spots than the type, thus corresponding to the *var. neera*, F. de W., of *Melitæa didyma*, O. On the upper side the fore wings have the spots much smaller than in the typical *gordius*; hind wings with the central row of spots entirely wanting; but it is on the under surface that the most remarkable difference exists. The hind wings, especially, have only the double hind-marginal row of dots, all spots intervening—with the exception of the central group—being absent. M. Charles Blachier, of Geneva (member of the Soc. Ent. de France, &c.), to whom I wrote for information on the subject, says "it must certainly be considered as an accidental aberration of the typical *gordius*." He adds, that this absence of spots in the genera *Polyommatus* and *Lycæna* is not very rare. I myself possess a male example of *L. cyllarus*. Rott. (in which all the spots on the under side of the hind wings are completely wanting). Bellier de Chavignerie, who collected a good deal in the South of France, writing in the 'Annales de la Soc. Entom. de France' (1858, p. 306), says, "Aber. ♀ ocellated spots on the under side almost entirely absent." Three only were caught in the course of the season (of which two were taken by myself). All stages intermediate between the typical *var. gordius* and this extreme form may be met with. — FRANK BROMILOW; Nice, S. France, Nov. 4, 1892.

[Mr. Leech has a male specimen from Germany in his collection, which is exactly of the same form as that described above. There is also, in the same collection, a female example from Spain, with the fore wings normal on the under side, but the hind wings are aberrant as in the variety referred to by Mr. Bromilow. The variety is figured by Herrich-Schäffer under the name of *P. hipponæ* (pl. 73, fig. 356). — ED.]

STAUIROPUS FAGI. — In my note, dated 8th January last (*ante*, 59), reference to my previous statement that *Stauiropus fagi* adopted the smaller and even the smallest trees as their resting-place, should be Entom. xxiv. 173, and xxv. 145. This statement, somewhat ridiculed



when first advanced, has, I am glad to see, in a paper by Mr. A. F. Bayne ('Record,' iv. 34), been allowed to pass from the region of theory into that of acknowledged fact.—J. CLARKE; Reading, Feb. 17, 1893.

FURTHER NOTES ON THE ECONOMY OF *RETINIA RESINELLA*, Linn. — In an earlier number of this magazine (Entom. xxiii. 76), I gave a brief sketch of the probable life-history of *Retinia resinella*. I have since, chiefly through the kindness of friends resident in the North, and others who have journeyed thither for the purpose, been able to verify the details then given. But one point in the economy of the species, of which I then had some knowledge, but which appeared to be so extraordinary that I refrained from publishing it until I had further opportunity of investigation, appears to be perfectly correct, namely, that the insect not only takes two years to complete its metamorphosis, but that the imagines appear only in alternate years; thus in 1888, 1890, and 1892 immature larvæ only were to be found; while in 1889 and 1891 the larvæ found in the spring months were invariably full-fed, and the imagines subsequently appeared. Many species occurring in North Britain are, I believe, to be found much more abundantly in alternate years, but I am not aware of any so completely biennial in their appearance as *resinella*, nor am I aware whether this species has a similar habit in other countries. Possibly some of our continental friends may be able to give us some information on this point; but providing that in such places the imago is annual in its appearance, the peculiarity above referred to would appear to point strongly to the species being a recent introduction to this country.—ROBT. ADKIN; Lewisham, Feb. 1893.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 8th, 1893.*—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. The President announced that he had nominated Mr. F. DuCane Godman, F.R.S., Mr. Frederic Merrifield, and Mr. G. H. Verrall, as Vice-Presidents during the Session 1893–1894. Mr. Charles R. C. Hibbert, of Holdfield Grange, Coggeshall, Essex; Mr. Oswald B. Lower, of Bleak House, Parkside, Adelaide, South Australia; and Mr. John Baxter Oliver, of 12, Avenue Road, St. John's Wood, N.W., were elected Fellows of the Society. Mr. S. Stevens exhibited a specimen of *Chærocampa celerio*, in very fine condition, captured at light, in Hastings, on the 26th September last, by Mr. Johnson. Mr. A. J. Chitty exhibited specimens of *Gibbium scotias* and *Pentarthrum huttoni*, taken by Mr. Rye in a cellar in Shoe Lane. He stated that the *Gibbium scotias* lived in a mixture of beer and sawdust in the cellar, and that when this was cleaned out the beetles disappeared. The *Pentarthrum huttoni* lived in wood in the cellar. He also exhibited *Mezium affine*, taken by himself in a granary in Holborn. Mr. McLachlan exhibited a large Noctuid moth, which had been placed in his hands by Mr. R. H. Scott, F.R.S., of the Meteorological Office. It was stated to have been taken at sea in the South Atlantic, in about lat. 28° S., long. 26° W. Colonel Swinhoe and the President made some remarks on the species, and on the migration of many species of Lepidoptera. Mr. W. F. H. Blandford exhibited larvæ and pupæ of *Rhynchophorus palmarum*, L., the Gru-gru Worm of the West Indian Islands, which is eaten as a delicacy by the Negroes and by the French Creoles of Martinique. He stated that

the existence of post-thoracic stigmata in the larva of *R. cruentatus* had been mentioned by Candèze, but denied by Leconte and Horn. They were certainly present in the larva of *R. palmarum*, but were very minute. He also exhibited a piece of a drawing-board, showing extensive injury by Longicorn larvæ during a period extending over seven years. Mr. G. T. Porritt exhibited two varieties of *Arctia lubricipeda* from York; an olive-banded specimen of *Bombyx quercus* from Huddersfield; and a small melanic specimen of *Melanippe hastata* from Wharnccliffe Wood, Yorkshire. Mr. H. Goss exhibited a few species of Lepidoptera, Coleoptera, Hemiptera, and Neuroptera, sent to him by Major G. H. Leatham, of the 31st Regiment, who had collected them, last June and July, whilst on a shooting expedition in Kashmere territory. Some of the specimens were taken by Major Leatham at an elevation of from 10,000 to 11,000 feet, but the majority were stated to have been collected in the Krishnye Valley, which drains the glaciers on the western slopes of the Nun Kun range. Mr. Elwes remarked that some of the butterflies were of great interest. Mr. G. F. Hampson exhibited a curious form of *Parnassius*, taken by Sir Henry Jenkyns, K.C.B., on the 29th of June last, in the Gasternthal, Kandersteg. Mr. J. M. Adye exhibited a long series of remarkable varieties of *Boarmia repandata*, taken last July in the New Forest. Mr. C. O. Waterhouse exhibited a photograph of the middle of the eye of a male *Tabanus*, showing square and other forms of facets, multiplied 25 times. Mr. Roland Trimen communicated a paper entitled "On some new, or imperfectly known, species of South African Butterflies," and the species described in this paper were exhibited. Mr. T. D. A. Cockerell communicated a paper entitled "Two new species of *Pulvinaria* from Jamaica." Mr. Martin Jacoby communicated a paper entitled "Descriptions of some new genera and new species of Halticidæ."—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 9th, 1893.*—Mr. J. Jenner Weir, F.L.S., President, in the chair. Mr. Frohawk exhibited hybernating larvæ of *Epinephale ianira*, and stated that they fed intermittently throughout the winter, seldom remaining more than ten or twelve days without food. Mr. Adkin, a series of *Aplecta prasina (herbida)*, bred from ova obtained from a moth captured at Polegate, Sussex, during the past summer; he stated that the larvæ showed a disposition to hibernate, and were with difficulty induced to feed up. Mr. Waller, a bred series of *Smerinthus tiliæ* from the London district; one of the specimens exhibited a tendency towards melanism. Mr. McArthur, *Taniocampa gothica* var. *gothicina*, *Coccyx cosmophorana*, and *Retinia duplana*, and a discussion ensued, Mr. Barrett stating that, in his opinion, the earlier specimens of so-called *R. duplana* brought from Scotland were only small specimens of *R. turionana*. Mr. Adye, a fine and variable series of *Boarmia repandata*, taken at sugar in the New Forest in July, 1892. Mr. Weir exhibited a photograph, taken from 'Insect Life' for January, 1893, of a twig bearing some two dozen specimens of *Anosia plexippus* resting at night during migration, and read a paper which illustrated the migratory instinct of this and, indirectly, of other species. A discussion, in which Messrs. Barrett, Weir, and Hawes took part, then followed, it being noted that whereas some dozen or more captures of *A. plexippus* were recorded for this country, only three were known to have been taken on the continent of Europe. Mr. Mansbridge read a



paper entitled "Notes on melanism in Yorkshire Lepidoptera," and exhibited a large number of specimens in illustration; he remarked on the tendency to melanism shown by many species within the boundaries of the towns, whilst in damp spots, barely five or six miles away, the same species would appear in quite its normal, *i. e.*, lighter, coloration. Many instances were cited, chiefly among the Noctuxæ and Geometræ. An interesting discussion was commenced, Messrs. Weir, Tutt, Barrett, and others taking part; and, on the suggestion of the President, was adjourned until the next meeting.—F. W. HAWES & H. WILLIAMS, *Hon. Secs.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Friday, January 20th, 1893.*—Mr. H. J. Burkill was elected a member; and Mr. H. W. Vivian, F.E.S., a corresponding member of the Society. Mr. Rickard exhibited some interesting Orthoptera and other insects from South Africa, among which were specimens of *Harpax ocellata* and *Cystocelia immaculata*. Mr. Farren, specimens of *Dasycampa rubiginea*, bred from the egg by Dr. Ridgway, and, for comparison, four specimens from the collection of the late Mr. J. Ross; Dr. Ridgway had described the specimens he bred as varieties, the variation consisting of the presence of some white dots in the anterior wings, the chief of which being a row of six near the subterminal line, and two near the base of the wing; and Mr. Farren pointed out that these white dots were also present in the specimens from Mr. Ross' collection. Mr. Theobald exhibited some small larvæ on a microscope-slide, which he described as "*Compontia cruciformis*, a supposed annelid, really the larva of a *Chironomus*, probably *Thalassomyia frauenfeldi* of Schinar. These larvæ live in the sea-weed, and have been taken from twenty fathoms." Mr. S. W. Key, a cocoon of *Cossus ligniperda*, spun on a piece of fire-wood.

*Friday, February 3rd.*—The following new members were elected:—Messrs. H. C. Hewitt, P. Heseltine, J. D. P. Wilks, A. H. Waters, B.A., J. S. Parker, H. W. Young, and E. A. Wilson. Mr. Rickard exhibited a number of un-named specimens of South African Coleoptera, Orthoptera, Neuroptera, and Hymenoptera. Among the Coleoptera were seven species of "weevils," some of which were very beautiful, as also were some species of *Cassida* ("tortoise-beetles"); among the Orthoptera were some interesting specimens of the genera *Mantis* and *Empusa*; the Neuroptera comprised some very fine specimens of three species of "ant-lions," Myrmeleontidæ. A paper was read by Mr. Farren "On the variation of *Papilio machaon*," which was illustrated by diagrams and over eighty specimens, among which were some showing the development of red in the posterior wings, ranging through intermediate forms, from some with the submarginal yellow lunules quite clear, to others with all six lunules suffused with red; also several with a suffusion of red inside the submarginal band; others had the submarginal band so wide as to reach and almost enclose the black patch at the end of the discoidal cell. Messrs. Jones, Rickard, Shrubbs, and Farren continued the discussion which ensued.—WM. FARREN, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*February 9th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, who was in the chair, referred to the death of the Rev. F. O. Morris, which occurred on the 4th February, in his eighty-third year. Mr. C. H. Hesketh Walker read a paper entitled "Pond-life." Referring to hobbies generally, he considered natural history was one of the most interesting. He then stated that a stagnant pond was a paradise prolific in animal life, and poetically described



it with all its attendant insects, &c., showing by a table that examples of most of the animal kingdom, from Protozoa to Mammalia, were to be found therein. Proceeding, he gave brief descriptions of these animals, illustrating his remarks by rapidly drawn figures on the black-board. The President exhibited some fine varieties of *Arctia caia*; also a number of port-wine corks completely riddled by some coleopterous or lepidopterous larvæ. Mr. Locke, *Carabus glabratus* from Langdale Pikes. Mr. Deville, *Goliathus giganteus* from Cameroons. Mr. Gregson, *Noctua triangulum* from Lancashire and London.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*February 6th, 1893. Annual Meeting.*—Mr. W. G. Blatch, President, in the chair. The Annual Report of the Council was presented by the Secretary; it showed a falling off in membership, but an active year. The Treasurer's annual statement showed a balance of only £1 2s. 1d. in hand. The following were elected as Officers and Council for the ensuing year:—President, Mr. W. G. Blatch, F.E.S.; Vice-President, Mr. G. H. Kenrick, F.E.S.; Hon. Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. H. Martineau; Hon. Secretary, Mr. Colbran J. Wainwright, 147, Hall Road, Handsworth, Birmingham; and remaining members of Council, Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn.—C. J. WAINWRIGHT, *Hon. Sec.*

THE ENTOMOLOGICAL CLUB.—A meeting was held at the Holborn Restaurant on January 18th, 1893. Mr. G. H. Verrall in the chair. The matter of the Club's collection of British insects was brought forward, but discussion thereon was postponed until the next meeting, when, it was proposed, the question should be fully considered, and arrangements made for perfecting the said collection, and rendering it again accessible to all who might desire to refer to it, either for the purpose of study or of identifying specimens. After supper, at which about forty guests assembled, Mr. Jacoby took up his violin, and, accompanied by Mr. Meyrick on the pianoforte, discoursed most excellent music, which contributed greatly to the enjoyment of an exceedingly pleasant evening.—R. SOUTH, *Hon. Sec.*

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## RECENT LITERATURE.

*British New Guinea.* By J. P. THOMPSON, F.R.S., G.S., &c. With map, numerous illustrations, and appendix. 8vo, pp. 336. London: George Philip & Son. 1892.

THIS volume, which is written in a somewhat different style to that of ordinary books of travel, is most interesting in all its details. That portion of the copious appendix which deals with insects, embracing some fifty-one closely printed pages, will be found of great value to entomologists.

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*Abstract of Proceedings of the South London Entomological and Natural History Society.* 1890 & 1891. 8vo, pp. 193. Published by the Society.

THE business transacted at each meeting throughout the years 1890 and 1891 appears from the reports, which are more complete in

detail than it is possible to give them in the entomological magazines, to have been both interesting and instructive. Several papers were read, and most of these are printed in full. Among those dealing with Entomology we note the following:—"On the Occasional Abundance of Certain Species of Lepidoptera in the British Islands," by Mr. R. Adkin; this paper is accompanied by a map "to illustrate the passage of the migratory swarms of *Vanessa cardui*, observed in 1879"; "Remarks on the Life-history and Habits of *Psyche villosella*," by Mr. J. Jenner Weir; "Remarks on Fungi Parasitic on Insects," by Mr. Tugwell; "Hymenopterous and Dipterous Parasites bred from Lepidopterous Hosts by Members of the Society," by Mr. T. R. Billups; "On the Genus *Triphæna*," by Mr. Adkin.

It is to be hoped that in course of time this Society may be able to publish the Proceedings of each year separately, and not later than March of the year following that to which such Proceedings properly belong. Although the present volume is late, it is nevertheless welcome, and we congratulate the Society on its production.

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*Transactions of the City of London Entomological and Natural History Society.* 1892. 8vo, pp. 49. Published by the Society.

COMPRISES reports of meetings and abstracts of papers read before the Society by members and others. Some of the papers, as, for example, "The Genus *Hepialus*," by Mr. Robson, and "The British Coccinellidæ," by Mr. Lewcock, are of an exceedingly interesting and most useful character, and well worth reprinting. The only thing at all original in Mr. Tutt's paper on "British Pterophorina" is the advertisement referring to a previous article on the subject by the same author, and his opinion of the educational and commercial value of that article.

Another year it would perhaps be well for those who may be responsible for the publication of these 'Transactions' to insert one or two papers and other items which have not appeared elsewhere, as a little new matter would freshen up the 'Annual,' and enhance its value.

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THE Annual Report of the Lancashire and Cheshire Entomological Society for the year 1892 contains the 16th Presidential Address by Mr. S. J. Capper, and a portrait of that eminent naturalist. There are also two papers:—"The Hydradephaga of Lancashire and Cheshire," by Mr. W. E. Sharp, V.-P., and "The Genital Armature of the Genus *Miana*," by Mr. F. N. Pierce, Hon. Sec. The latter appears to have rather an unfortunate title, as only two species are dealt with, *i.e.*, *M. strigilis* and *M. fasciuncula*, which had been considered by a few entomologists to be merely forms of one species. Although the fact of these two insects being perfectly distinct was well established, on characters more convenient for observation than are the genitalia, the author of this paper has done good service in bringing forward the results of his investigations. The progress of Entomology (with some special reference to the economic branch) during the past fifty years is the main feature of the President's excellent address.

# THE ENTOMOLOGIST.

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[No. 359.]

*ARGYNNIS PAPHIA*, ♀ AB.

By F. W. FROHAWK, F.E.S.



DURING the last thirteen or fourteen years there have been captured, in the New Forest, white-spotted forms of *A. paphia*.

The first recorded examples I am aware of, relating to this singular aberration, are those mentioned by my friend Mr. Jenner Weir (*Entom.* xiii. 216). In his interesting notes on *A. paphia*, he states:—"The appearance yearly of this insect with white spots on the wings is worthy of remark; last year (*viz.*, 1879) I was equally fortunate in taking specimens so coloured." A coloured figure of a male of this variety appears in *Entom.* xv. (Pl. I. fig. 3).

I believe this phase of variation is generally confined to the male sex; certainly by far the greater number of those I have seen have been males. The size and number of pale spots vary a good deal; most frequently there is a white spot on each wing; other specimens have a single spot on one wing only, whilst in others the primaries only are spotted.

I think the most interesting and remarkable example I know of is that of a female which fell to the net of Mr. J. H. Carpenter, on July 23rd last, which I described in *Entom.* xxv. 242, and which is represented in the above figure.



The specimen is not only an extreme example of the white-spotted form, but it has, in addition, large pearly-green blotches on the secondaries, of much the same colouring as that of the var. *valesina*; thus exhibiting a curious combination of the white spotting of the male aberration referred to, the ground colouring of the normal female, and part coloration of *valesina*.

I am not aware of the occurrence of the white-spotted form of *paphia* in any British locality, other than the New Forest.

It is reasonable to suppose, from what we know of the earliest existing Lepidoptera, that they lacked then the brilliancy of colour with which so many are now adorned, and that, in the world's earlier ages, only brown, black, and white forms existed; therefore, in all probability, var. *valesina* still represents the ancestral colouring of the species we know as *A. paphia*, and possibly the white spots appearing in certain of the males may be instances of reversion to a later transitional stage in the development of that species.

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## LEPIDOPTERA OF THE SHETLAND ISLANDS.

BY RICHARD SOUTH.

MR. McARTHUR, who spent the summer of 1892 in the Shetlands, was good enough, on his return in September last, to allow me to examine the small but interesting collection of Lepidoptera which he had made, under the most adverse meteorological conditions, in this far-away portion of Great Britain.

On his way to Shetland, Rannock in Perthshire was visited, and *Asteroscopus nubeculosa* searched for. This species appears to be getting scarcer in its old Scottish locality. The bulk of the specimens taken last year were captured at the end of March, when the days were really warm. Larvæ of *Sesia scoliiformis* were also obtained, and from these a few imagines were subsequently bred. On the 15th of April, when Mr. McArthur left Rannock for Forres in Morayshire, the weather was very severe, and everything deeply buried in snow. At Forres the weather was fine on the 17th and 18th of April, and a good number of *Retinia duplana* were taken, but on the 19th there was a change, and wintry weather again prevailed, putting a stop to entomological work until May 18th, on which day a start was made for Shetland. After his arrival the weather seems to have been fine for about a week, but later on was of a most uncongenial character. From the 8th of July until the end of August the sun was only visible at rare intervals for about five minutes at a time, and altogether there were not twenty-four hours of sunshine throughout the whole period referred to. Seeing how unfavourable the weather was for collecting, it is not surprising

that several species of Lepidoptera, obtained in previous years in the Islands, were not observed at all last year, and that of those met with the majority were scarce.

Having heard that Rowness Hill was a likely place to get insects, as it was said to be well covered with sallow and birch, Mr. McArthur explored that district thoroughly last year, but only to find that it was a bleak and bare mass of red granite, almost devoid of vegetation, and without any entomological promise whatever. He therefore returned to Lerwick, where he settled at Cunningsburgh until it was time to go on to Unst, the most northern isle of the Shetland group.

The following list of the species taken last year has been kindly communicated by the captor :—

*Vanessa cardui*, common in 1891; I saw many pinned to the walls in some cottages in Unst; last season there was not one to be seen, and I could not find any larvæ. *Sphinx convolvuli*, two only, in poor condition. *Macroglossa stellatarum*, only one seen last season. *Hepialus humuli*, not abundant, and the forms were not so striking as those taken in other seasons. *H. velleda*, very rare; other years in thousands. *Xylophasia monoglypha*, never very plentiful in the Shetlands. *Charaas graminis*, two only; abundant in other seasons. *Mamestra furva*, fairly common at flowers. *M. brassicæ*, one worn specimen. *Apamea basilinea*, one; this species and *M. brassicæ* are very rare in the Islands; I have only met with one or two each season. *Celæna haworthii*, rare last season, but in previous years it was in abundance. *Agrotis suffusa*, always rare, two or three each season. *A. cursoria*, one only; this fine form (*vide* Entom. xvii.) I found very abundant ten years ago; the following year Mr. Curzon found it common; since then it had not been taken until last season. *Noctua glareosa*, fairly common. *N. festiva* var. *thules*, abundant. *N. xanthographa*, rare. *N. c-nigrum*, one only. *Triphaena pronuba*, fairly common, but never so abundant as it is in the south. *Pachnobia hyperborea*, one female only; a few larvæ in their first year, but it would have been useless to take these. *Dianthæcia nana*, saw one specimen; larvæ fairly common later in the season. *Dasypolia templi*, larvæ common. *Aplecta occulta*, three; always rare; as a rule only two or three specimens have been obtained each season. *Crymodes exulis*, this prize I took more commonly than before, but the forms are not nearly so good. *Hadena adusta*, fairly common. *H. dentina*, rare last season; odd specimens were met with from May to the end of August. *H. oleracea*, one very much worn. *Plusia gamma*, common last season. *Anarta melanopa*, common; fortunately there happened to be three or four fine days just at the time this species was out. *Larentia didymata*, rather rare; some seasons in swarms. *L. cæsiata*, generally very abundant, but rare last year; the few examples taken were darker than usual. *Emmelesia albulata*, rare in all stages last season. *E. blandiata*, a few each season. *Eupithecia venosata*, common in all stages. *E. nanata*, not common. *Melanippe montanata*, not common last season. *M. fluctuata*, always very rare; two in 1879; three last season. *Coremia munitata*, fairly common. *Camptogramma bilineata*, very rare; formerly abundant. *Cidaria immanata*, fairly



common in one place. *C. testata*, rare last year. *Scoparia ambigualis*, *S. atomalis*, very rare last year; other seasons abundant. *S. alpina*, a nice lot, but the forms not so good as those I obtained in 1879. *Herbula cespitalis*, a few. *Crambus pratellus*, common. *C. pascuellus*, *C. perlellus*, *C. hortuellus*, rare last season. *Sericoris littoralis*, always rare. *S. lacunana*, not common; a few each season. *Mixodia schulziana*, two only; some seasons in thousands. *Cnephasia musculana*, common. *Sciaphila colquhounana*, fairly common. *Bactra lanceolana*, common. *Phoxopteryx unguicana*, a few; common some seasons. *Dicrorampha tanacetii*, common in the larva state. *Catoptria ulicetana*, common; very small form. *Symæthis oxyacanthella*, larva state only. *Eupæcilia thuliana*, rare last season. *Argyrolepis cnicana*, common. *Blabophanes rusticella*, a few. *Plutella cruciferarum*, two. *Gelechia plantaginella*, fairly common. *G. ericetella*, rare last season. *Endrosis fenestrella*, too common. *Glyphipteryx cladiella*, a few.—(McARTHUR).

Of the majority of the species enumerated above there is little now to say, as they have been fully dealt with in former papers on the Lepidoptera of Shetland by Mr. J. Jenner Weir and the late Mr. Howard Vaughan (Entom. xiii. pp. 249—251, 289—293, plates 3 and 4; xvii. pp. 1—4, pl. 1). With regard to one or two of them, however, I venture to make a few remarks.

**HEPIALUS HUMULI.**—With one exception, all the males of this species taken by Mr. McArthur on the cliffs in Unst, which face the south-east and are drier than other parts of the island, were more or less typical, and he informs me that he never remembers to have taken a smoky or richly-marked specimen on the cliffs. On the other hand, the majority of the specimens captured in the boggy meadows and water-sodden "corn rigs" were of the form known as var. *hethlandica*, Staudinger. By the way, Newman's name *thulensis* (Entom. ii. 176) is earlier, and ought perhaps to be adopted for this form.

**CRYMODES EXULIS.**—This was the best insect obtained in the Shetlands last year. The specimens, between fifty and sixty in number, exhibit considerable variation, and among them are examples agreeing with typical *exulis*, whilst others are of the *grœnlandica* form. None of the specimens, however, were like the Perthshire form *assimilis*; neither do any of them agree with any Iceland examples of the species that I have seen.

The type of *exulis*, as described and figured by Lefebvre (Ann. Soc. Ent. Fr. 1836, p. 392, pl. x. fig. 2), has the fore wings variegated with grey and brown; the central third of the wing is reddish brown, limited by dentated black lines, which are edged with yellowish grey; the stigmata are outlined in grey, the orbicular placed obliquely, and the reniform is bordered outwardly with yellowish white; submarginal line dentated, tawny, and preceded by several cuneiform brownish marks. Fringes reddish brown chequered with tawny. Hind wings tawny grey, with yellowish white fringes. Under side of all the wings yellowish sprinkled with grey, and with a brown arcuated line



and discoidal spot; the line on hind wings more dentated and better defined than that on primaries. Antennæ brown, filiform.

The female was described by Lefebvre under the name of *gelata* (*l. c.*, 393, fig. 3):—Fore wings grey-brown, with a paler space in the middle, and transverse blackish brown dentated lines, one near the base and the other two towards outer margin, the outermost (submarginal) slightly bordered internally with yellowish; the stigmata are outlined with white and filled up with grey; between them is a blackish brown spot, which extends beyond the orbicular. Fringes grey chequered with yellowish, and preceded by a series of small black lunules. Hind wings reddish grey, with brownish marginal band and yellowish fringe. Under side of all the wings uniform reddish grey or yellowish, with a brown curved line and discoidal spot; the line of hind wing more sinuate. Antennæ yellowish grey.

*Grœnlandica*, Duponchel, iii. pl. 21, figs. 3 *a*, *b*. — The figure of the male represents an insect with greenish grey fore wings; the median space between the first and second pale black-edged dentated lines, and the outer margin is darker; the stigmata are filled up with the pale ground colour, and seem to extend to the costa. Hind wings grey-brown, paler towards base. Fringes of fore wing of the pale ground colour chequered with darker; of the hind wing pale grey-brown, preceded by a blackish line. The figure of the female has the fore wings warm reddish brown; 1st and 2nd transverse line curved, broad, and yellowish; submarginal line wavy.

*NOCTUA FESTIVA* *var.* *THULES*.—In some examples the reniform and orbicular stigmata are filled up with pale ochreous. In others the claviform stigma is represented by a pale dash, outlined in blackish, extending from inner line to central transverse shade.

*NOCTUA GLAREOSA*.—I understand from Mr. McArthur that two forms of this species occur in Unst. One of these, which is grey and but little darker than the type, is found on the heath-covered banks at Burrafrith; whilst the other, a dark chocolate-coloured form, frequents the low-lying wet moors near Baltasound.

*DASYPOLIA TEMPLI*.—From larvæ obtained a long and interesting series was bred, among which are some unusually pale specimens.

*ANARTA MELANOPA*.—There is a good deal of variation within certain limits, but none of the specimens approach the dark alpine form known as *v. rupestralis*, Hübn., examples of which I am informed have been captured in Scotland.

*EMMELESIA ALBULATA*.—Scarce and less variable than usual. No example of *var. thules*, Weir (*Entom.* xiii. 290), was obtained.

*EUPITHECIA VENOSATA*.—Among the usual leaden grey suffused specimens are some examples with a reddish grey tinge which I

do not remember to have seen represented in former collections from the Shetlands.

*SCIAPHILA COLQUHOUNANA*.—This species had not been previously detected in Shetland. Mr. McArthur found larvæ not uncommonly in the root-crowns of *Plantago maritima* and *Armeria vulgaris*. Two larvæ which he was good enough to send me were received on the 20th June, but one of these had left its mine and got crushed; the other, of which I append a description taken down on the day it came to hand, died in the act of pupating.

*Larva of S. colquhounana*.—Length three-quarters of an inch. Fuliginous grey-brown. Head dark red-brown; mandibles and plate on second segment black. The skin is puckered on the sides and transversely folded on the back; there are subdorsal and spiracular series of black warts, each wart emitting a short bristle; the thirteenth segment has a black wrinkled plate.

## A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from vol. xxv., p. 207).

### LEPIDOPTERA.

#### PYRALIDIDÆ.

*Aglossa pinguinalis*, L., Harefield, common (Wall); Whitton (Rendall); Dalston (Prout); [Mill Hill, common (South)].

*Pyralis glaucinalis*, L., Millfield Lane (Vaughan); Harefield, frequent (Wall); Bedford Park (J. W. Horsley); Whitton (Rendall); [Mill Hill, sometimes abundant at sugar (South)]. *P. costalis*, Fb. (= *fimbrialis*), Kentish Town, Highgate (Vaughan); Whitton (Rendall); Dalston (Prout); [Kingsbury, Mill Hill, Northwood (South)]. *P. farinalis*, L., Kentish Town (Vaughan); Harefield, occasional (Wall); Whitton (Rendall); Highgate (Shepherd); Dalston (Prout); [Hampstead, Kingsbury, Kilburn (South)]. *P. pictalis*, Curt., Limehouse, London (see C. G. Barrett, Ent. Mo. Mag., 1890, p. 138).

*Scoparia mercurella*, L., Hampstead (Knaggs fide Vaughan); Dalston (Prout); [Kingsbury (South)]. *S. dubitalis*, Hb., Hampstead (Knaggs fide Vaughan). *S. ambigualis*, Tr., Hampstead (Knaggs fide Vaughan).

*Nomophila noctuella*, Schiff., Harefield, common (Wall); Whitton (Rendall); [Northwood, 1892 (South)].

*Pyrausta purpuralis*, L., Harefield, frequent (Wall). *P. aurata*, Scop. (= *punicealis*), field at Finchley end of Bishop's Wood (Vaughan).

*Endotricha flammealis*, Schiff., Harefield, taken twice (Wall); Whitton (Rendall); [Northwood (South)].

## BOTYDÆ.

*Eurrhyncha urticata*, L., everywhere in suitable localities (Vaughan); Harefield, fairly common (Wall); Bedford Park, on *Urtica dioica* (Ckll.); Isleworth (Fenn); Highgate (Shepherd); Dalston (Prout).

*Scopula olivalis*, Schiff., everywhere in suitable localities (Vaughan); Harefield, very common (Wall); Bedford Park (J. W. Horsley); Whitton (Rendall); Tottenham (Prout). *S. prunalis*, Schiff.,\* everywhere in suitable localities (Vaughan); Whitton (Rendall); Tufnell Park (Shepherd); Tottenham (Prout). *S. lutealis*, Hb., Whitton (Rendall).

*Botys ruralis*, Scop. (= *verticalis*), everywhere in suitable localities (Vaughan); Harefield, very common (Wall); Isleworth (Fenn); Bedford Park, on *Urtica dioica* (Ckll.); Whitton (Rendall); Highgate (Shepherd). *B. fuscalis*, Schiff.,† Harefield, common (Wall).

*Ebulea sambucalis*, Schiff., everywhere in suitable localities (Vaughan); Harefield, taken occasionally (Wall); Bedford Park (Fenn); Whitton (Rendall); Tufnell Park (Shepherd); Dalston (Prout); [St. John's Wood, common (South)].

*Spilodes* ‡ *sticticalis*, L., Gray's Inn Gardens, 1880 (Meldola, Entom. 1887, 235).

*Pionea forficalis*, L., everywhere in suitable localities (Vaughan); Harefield, common (Wall); Whitton (Rendall); Finchley (Shepherd); Dalston (Prout).

## HYDROCAMPIDÆ.

*Catoclysta lemnata*, L. (= *lemnalis*), Hampstead and Highgate ponds (Vaughan); Harefield, abundant (Wall); Finchley (Shepherd); [Kingsbury (South)].

*Paraponyx stratiotata*, L. (= *stratiotalis*), Hampstead and Highgate ponds (Vaughan); Finchley (Shepherd).

*Hydrocampa nymphæata*, L. (= *nymphæalis*), Hampstead and Highgate ponds (Vaughan); Harefield, common (Wall); Isleworth (Fenn). *H. stagnata*, Don. (= *stagnalis*), Hampstead and Highgate ponds (Vaughan); Harefield, abundant (Wall).

## ACENTROPODIDÆ.

*Acentropus niveus*, Oliv., Hampstead Ponds (Knaggs, fide Vaughan; see also Barrett, Ent. Mo. Mag. 1888, p. 199); [St. John's Wood, once taken in a shop in the Abbey Road, probably introduced, with watercress or some other aquatic plant, as a larva or pupa (South)].

\* This has been referred to the genus *Phlyctænia*, Hb.

† This belongs to Mr. Warren's genus *Opsibotys*.

‡ It would appear that according to priority this genus should be called *Loxostege*, Hb.



## CRAMBIDÆ, subf. CHILONINÆ.\*

*Chilo phragmitellus*, Hb., Hammersmith marshes (*Knaggs fide Vaughan*).

*Schœnobius forficellus*, Thnb., Hampstead, Highgate, Haverstock Hill (*Knaggs fide Vaughan*); Camden Road (*Vaughan*); Harefield, common (*Wall*).

## Subf. CRAMBINÆ.

*Crambus pascuellus*, L., Isleworth (*Fenn*); [Mill Hill (*South*)]. *C. hortuellus*, Hb., common (*Vaughan*); Harefield, common (*Wall*); Isleworth (*Fenn*); Bedford Park (*Ckl.*); Whitton (*Rendall*); Finchley (*Shepherd*); Dalston (*Prout*). *C. culmellus*, L., common (*Vaughan*); Harefield, abundant (*Wall*); Bedford Park (*J. W. Horsley*); Finchley (*Shepherd*); Dalston (*Prout*). *C. tristellus*, Fb., common (*Vaughan*); Harefield, abundant (*Wall*); Whitton (*Rendall*); Finchley (*Shepherd*); Clapton (*Prout*). *C. pratellus*, L., common (*Vaughan*); Harefield, very common (*Wall*); Whitton (*Rendall*); Dalston (*Prout*). *C. pinellus*, L., Harefield, once taken (*Wall*); Whitton (*Rendall*). *C. perlellus*, Scop., Harefield, twice taken (*Wall*); Dalston (*Prout*); [Mill Hill (*South*)]. *C. margaritellus*, Hb., Whitton (*Rendall*).

## PHYCITIDÆ.†

*Myelois ceratoniæ* var. *pryerella*, *Vaughan*, London Docks (see *A. F. Griffith*, Ent. Mo. Mag. 1890, p. 120).

*Ephestia elutella*, Hb., ‡ Somers Town (*Knaggs, fide Vaughan*); Kentish Town (*Shepherd*); Dalston (*Prout*). *E. kühniella*, Zell., London (*S. T. Klein* and others).

*Euzophera pinguis*, Haw., Regent's Park (*Vaughan*).

*Cryptoblabes bistriga*, Haw., Highgate Woods (*Bartlett fide Vaughan*).

*Phycis betulæ*, Göze, Highgate Woods (*Bartlett, fide Vaughan*, as *betulella*); [Northwood, not uncommon in the larval stage (*South*)].

*Rhodophæa consociella*, Bishop's Wood (*Vaughan*); [Mill Hill (*South*)]. *R. tumidella*, Zinck., Bishop's Wood (*Vaughan*). *R. advenella*, Zinck., Highgate Road, at light (*Vaughan*); [Mill Hill, Northwood (*South*)].

\* The Chilidæ and Crambidæ of our lists seem at best only subfamilies, to be classed under the family Crambidæ. Dr. Fernald, in Prof. J. B. Smith's recent American list, does not even recognise them as distinct subfamilies.

† Phycidæ of the Synonymic List. As in Prof. J. B. Smith's list, this and the next family are given as distinct from Crambidæ, and from each other. Mr. Hulst divides the American Phycitidæ into two subfamilies.

‡ For a record of this species in London, see Ent. Mo. Mag. 1884, p. 164; where also is mentioned *E. parasitella*, a species apparently unknown to our lists.

## GALLERIIDÆ.

*Galleria mellonella*, L., Harefield, very frequent, sometimes injurious, causing destruction of weak hives (*Wall*).

*Aphomia sociella*, L., Harefield, once taken (*Wall*); Whitton (*Rendall*); [Northwood (*South*)].

*Achræa grisella*, Fb., Harefield, common (*Wall*).

(To be continued.)

Institute of Jamaica, Kingston, Jamaica, Aug. 21, 1892.

## THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. PERRY COSTE, B.Sc. (Lond.), F.C.S., F.L.S.

(Concluded from p. 85.)

## V.—EFFECT OF LITHIUM SALTS.

Having so disposed of the alkalis, it seemed highly desirable to ascertain what effect salts of the alkaline earths would have. A number of salts of calcium, barium, and strontium were therefore tested; and, in addition to these, salts of zinc and magnesium, of several heavy metals, and also several organic acids, were tested; the test being in each instance made by exposing to their action wings of species that were known to be susceptible. The vast majority of these results were negative, no reaction, such as was sought for, being obtained.

In a few cases, however, positive results were obtained. Barium chloride, zincic sulphate, and also—strangely enough—salicylic and succinic acids, were found to give the purple-pink reaction more or less faintly. The reaction with zinc sulphate is interesting, in that the under side of the wing itself was observed to have become almost a “cyanide-red.” This seems to offer some hope of connecting together the cyanide and the lithium reactions. Again, in the experiments with salicylic acid and with barium chloride it was observed that there was a faint pink tinge on the wing itself, as well as on the surface of the acid; whereas, in the majority of the experiments, this pink was found only on the surface of the chemical used.

The most promising of these last experiments had been that made with barium chloride, and it was, therefore, thought worth while to make a set of experiments with this reagent. Barium chloride was, therefore, tested by exposing to it a large number of species, just as in the case of lithium sulphate; and the results are confirmatory of the lithium results. Here, again, the reaction was obtained from several of the Pieridæ, e. g., *C. edusa* and *C. hyale*,

but from no other Rhopalocera, and from no Heterocera at all, although, in all, some score species were tried.

These varied experiments show that the purple-pink reaction is not confined to lithium salts, but may be produced by several others; and also, strangely enough, by at least two organic acids. On the other hand, they equally serve to show that the true cyanide-red reaction, in its characteristic form, is confined to the cyanides. Thus, although in all nearly 100 different reagents have been examined in this way, in no case has the characteristic cyanide reaction been obtained otherwise than with potassium cyanide.

The question now arises, what is the relation of this purple-pink reaction to the cyanide-red reaction? At first, I admit, the question perplexed me a good deal. Coming upon the lithium reaction for the first time, and in an experiment too that had been designed to determine whether any other compounds would give the same results as potassium cyanide, it was natural perhaps to suppose that this was really the same reaction. Yet such a supposition is confronted with the difficulty that neither element is common to the two compounds, lithium sulphate and potassium cyanide, so that if the reaction be considered the same, it would be difficult any longer to hypothecate any combination between the cyanogen or hydrocyanic acid and the natural pigment. However, further experiment and reflection have led me to look upon the two reactions as distinct, though similar. In the first place the two colours respectively produced are quite distinct, the one being a brilliant blood-red, and the other a purple-pink; secondly, the cyanide-reaction under favourable conditions is comparatively rapid, being completed in a single night, whereas the lithium reaction may *continue* for days or even several weeks *under similar conditions*. This difference is readily intelligible, since in the former case the red colour is produced in or on the wing, whereas in the latter the pigment is probably slowly dissolved, and then the pink compound formed.\*

It is true that the action of zincic sulphate with *C. edusa* seems to afford a somewhat intermediate case, since there was a reddish colour on the wing here; but this colour was found only on looking at the under surface of the wing, and was, therefore, distinguished from the bold brilliant cyanide-red which rapidly spreads throughout the wing.

I conclude, therefore, that we have here two distinct reactions; but, on the other hand, although distinct, they are clearly parallel. It is *very significant* that the purple-pink, *however produced*, is confined to that same group of the Pieridæ to which the cyanide-reaction is confined; and that no other Rhopalocera, and no Heterocera at all, have, so far, been found to yield either

\* In a more recent experiment, however, with Li SO and *cleopatra*, I have succeeded in obtaining a fine *purple* streak on the wing.



reaction. So marked a parallelism points clearly to a common cause; and it is, I think, a very legitimate assumption that the same yellow pigment combines in the one case with potassium cyanide or hydrocyanic acid to form the brilliant cyanide-red; and, in the other, reacts with lithium sulphate, barium chloride, or one of several other compounds, to produce the purple-pink colour. As to the nature of this latter reaction, it seemed doubtful whether to attribute the colour to the formation of a definite compound between the pigment and the reagent, seeing that any one of some seven or eight reagents may produce it; while the fact that among them must be reckoned at least two organic acids bars the suggestion that had previously occurred to me, *viz.*, that the lithium, barium, and other salts, were efficacious *as salts*, and not as containing any given element or radicle. However, the nature of this purple-pink reaction is a subject for future investigation.

Here, then, the matter stands for the present. In addition to the foregoing results sundry other experiments have been made, which were discussed in my paper presented to the Linnean Society, but which I pass over here; and I also omit a discussion which closed my paper (for I do not wish to trespass unduly on the space which the Editor has kindly invited me to occupy by this account); but it would be ungrateful to conclude without acknowledging my great indebtedness to Mr. Warburg for his kindness in supplying me with specimens for experiment. The greater part of the work recorded in this paper has been carried on with materials sent me by Mr. Warburg. To sum up:—

I. Various yellow and orange species of the Pieridæ rapidly become of a brilliant red when exposed to the action of “sloppy-solid” potassium cyanide.

II. Faint indications of a similar nature are obtained by the use of sodium cyanide.

III. No such reaction can be obtained with ferrocyanides, sulphocyanides, ammonium salts, nitrates, or with any other of many reagents examined.

IV. When exposed under similar conditions to the action of lithium sulphate, a fine purple-pink colour is produced, staining the salt. Similar, more or less faint, results are obtainable with several other reagents.

V. All of these reactions are confined to the Pieridæ, and are obtainable from no other yellow or chestnut Rhopalocera or Heterocera yet examined.

VI. The cyanide-red is probably produced by the union of the yellow pigment with potassium cyanide or hydrocyanic acid. The nature of the reaction by which the purple-pink colour is produced is at present uncertain.

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## OBSERVATIONS ON BRITISH ODONATA.

BY W. HARCOURT BATH.

I WAS exceedingly interested with Mr. Arkle's paper (Entom. 35—58) on the Dragonflies of the Dee Valley. One very common species, I notice, is not mentioned in his list, namely, *Platetrum depressum*, which most likely occurs within the district, although it is no doubt very local. Last season I saw several specimens of this insect at Arthog, in North Wales, and also possess examples in my collection from Welshpool, which localities are, however, both just outside the area in question. This well-known species is universally distributed, and very plentiful throughout the south of England, but appears to become scarcer the more one travels northwards.

Another common species, not included in Mr. Arkle's list, is *Æschna cyanea*, which is the most familiar member of its family in south Britain, a closely allied species, *Æschna juncea*, appearing to monopolise this position in Scotland and Ireland. These two species are never known (at least as far as my experience goes) to occur together in the same locality, and the same also holds good as regards *Calopteryx virgo* and *C. splendens*.

Undoubtedly the best species mentioned in Mr. Arkle's paper is *Leucorrhinia dubia*, which, however, is generally found in abundance wherever it occurs, frequenting many mosses and moors in the North of England. I may here remark that the locality given for the species in my 'Illustrated Handbook of British Dragonflies' as "Thorne Moor, near Dorchester," is, I find, after considerable investigation, Thorne Waste, near Doncaster. There is no such place in Dorsetshire, although it is recorded as such in the works of several authors, in copying from whom I fell into the same error, which I take this opportunity of correcting.

Mr. Arkle rather amuses me by the way in which he makes use of the "mother-tongue" names of dragonflies; one would think they had been in use for half a century at the least. They were in fact only invented by myself about four years ago, and were not intended for the use of scientific students, but simply to popularise the study of these grand insects among young beginners who, as a rule, object to the use of long Latin cognomens. Some entomologists may perhaps be inclined to ridicule them, but I do not consider they are more absurd than the familiar names by which most butterflies and moths are known.

It seems to me incomprehensible that more entomologists do not study and collect these grand insects, considering how much in evidence they always are during every summer ramble. In size they are, as a group, not eclipsed by any other in this country. Some of the species of *Æschnidæ*, on account of their

gigantic proportions, look by far more like the denizens of the tropics than of these Northern Isles. A good collection of these handsome insects is indeed a grand sight to behold, and well worth possessing.

Although my little handbook has been the means of inducing some hundreds of persons to take up the study of our native dragonflies, a great many more could no doubt be drawn to them, provided that an illustrated monograph of these beautiful and interesting insects were published, giving a life-like figure of every species and its varieties which are known to occur in the British Isles, and I think the time is now quite ripe for such a publication. Some five or six years ago I first seriously contemplated preparing a work of the kind, and have fostered the idea ever since. I have even gone so far as to pay a preliminary visit to the Continent, in order to procure some necessary material for such a work, much of which is difficult to obtain on this side of the English Channel. I have, however, decided for various reasons to abandon the project for an indefinite period. But cannot someone else be found who could be induced to undertake a monograph of our British *Odonata*? I, for one, should be very pleased to render every assistance in my power in the promotion of such a project.

Will you permit me, in conclusion, to ask those of your readers who study these fine insects, to oblige me with local lists of species, as I am endeavouring to elucidate their geographical distribution in the British Isles, the result of which I hope to publish in some future number of the 'Entomologist.'

195, Ladywood Road, Birmingham.

## REMOVAL OF GREASE FROM MOTHS.

MR. CHRISTY is right in suspecting (Entom., p. 33) that benzine would be effective in removing grease from large insects and without opening the body. For many years I have followed the plan recommended me by the late Mr. Edward R. Pearson, late of Wallington, Northumberland. He, in his turn, had it from an experienced entomologist, and I have no doubt it is very generally known and adopted. Mr. Pearson used benzoline, which has this advantage over benzine collas,—it is far cheaper while being equally efficient. Now for the plan:—

1. Put the set and dried insect, without removing the body, into a wide-mouthed bottle three parts filled with benzoline. The benzoline does not at all relax the wings, &c., but thoroughly cleans them if greasy. Stop the bottle with a well-sealed cork. The benzoline searches through and through the body and dissolves the grease, which is taken up or held in solution, or deposited.

2. After a few days—say a week in the case of *Cossus ligniperda*, *Sesia bembeciformis*, or *Dicranura vinula*—remove the insect into a second bottle of benzoline.



3. *At the end of another week place the insect in a third bottle; and if the benzoline refuses to discolour, the moth is clean. Should the benzoline still discolour, which is unlikely, continue the process.*

4. Place a layer, half an inch thick, of powdered plaster of paris, on a piece of board. Make, in the powder, a furrow wide enough to hold the body, and let the powder slope on either side to accommodate the wings.

5. Take out the insect, and place the body in the furrow. Then cover the moth—wings and all—with an an inch or more of plaster of paris. Leave it for an hour. The powder assists the drying.

6. Get hold of the pin in the insect, and gently shake and blow off the powder. The insect is clean and dry; all its colours are restored: no damage has been done to it—not even to the antennæ. Complete the cleaning process, if necessary, by using a soft camel-hair brush.

As benzoline is highly inflammable, keep it locked away. Operate by daylight. A friend told me he was using benzoline one night near a lit gas-jet. He turned his back for a minute, and there was—not an explosion, but “a flare-up,” which would certainly have blinded him. Mr. Christy deserves the thanks of many an entomologist for reviving this useful subject; while the name of Mr. Greene, of course, is among entomologists as a household word. My own remarks upon the matter are not intended to be critical but supplemental, and in this spirit I trust they will find their apology. In conclusion, I may add that the passages in *italics* are tried and valuable additions to the method by a practical chemist.—J. ARKLE; Chester, February 6, 1893.

There is no doubt that grease gives a great deal of trouble to the lepidopterist, and Mr. Christy's article on “the removal of grease from the bodies of moths” (*Entom.*, p. 32), conveys many useful hints to the collector. A greasy butterfly or moth, whilst in that state, is no longer “a thing of beauty,” but a positive eyesore, especially to those who, like myself, are particular as to the condition of their specimens, preferring a fine, short series to any number of indifferent examples. Mr. Christy has confined his remarks to grease in the bodies—abdomens—of moths, and bad as this is, so far as my own experience goes, this is not the worst evil. In fact, except for the trouble it gives, there is very little difficulty in removing grease in bodies. Break them off, number them, and soak in benzine or benzole once, twice, or thrice, as the case may require, stick them on, and the thing is done. I always use benzole myself, and find it equally effective as benzine and much cheaper. For fixing bodies I prefer gum for slight bodies, such as the Geometers, and Le Page's liquid glue for bulky bodies like those of the Sphingidæ. Rarely, except in the case of the latter and Bombyces, is it necessary to remove the contents. Now it seems to me that grease does not always emanate from the abdomen, but at times exudes from the thorax, and spreads through the silky hairs clothing the thorax—oftentimes a part of exceeding beauty—and covers the wings, and then it is that grease is indeed a nuisance. I may be displaying my anatomical ignorance here, and it may be that it is not possible for grease to exude from the thorax. All I can say is then that many insects, *inter alia* *Demas coryli*, appear to grease in the thorax before any trace of it is to be seen in the bodies. And there is no way of preventing it that I know of; you cannot cut out the thorax, and you cannot prevent the exudation of grease spreading to the wings. If the bodies grease, the grease in them ought to do no further mischief if the body has been put

into proper position, and *the under wings set so that they do not come in contact with it*. I have said that I know of no preventive for grease in the thorax. Is there a cure? Well, its ill effects may be much mitigated, and this by sinking the whole insect in benzole. To do this a stage of pith, or fungus, which must be weighted with lead on the under side, must be used. Cork is useless, and for this reason:—the insects to be soaked must be squeezed down into the stage *till the wings rest upon the surface*, otherwise it will be found that the cilia are inextricably matted; and cork is too hard to allow of this being done. Sometimes it will be found necessary to repeat the process over and over again; they must then be dried and covered with powdered French chalk. When removed, perhaps they may be presentable; but the glory of a thorax such as that of *Smerinthus ocellatus* or *Eugonia alniaria* (*tiliaria*), alas! it has departed, and it will take a very clever person to restore it again. It has often struck me that the freaks of grease are rather unintelligible. Why is it that the typical female of *Colias edusa* seldom greases, and the var. *helice* nearly always does; and my experience is based on many dozens of the variety, and scores of the type? Why, in some species, is it always the male, in others the female, that gets greasy? Some years ago a physician, who was also an entomologist, thus wrote to me:—"I do not regard it (grease) as a putrefactive change, but in its nature rather the opposite, though it spoils the look of specimens, and more analogous to a peculiar fatty production which takes place in dead human and other bodies, after they have been interred some time. The whole body often becomes changed into this peculiar solid, greasy matter, which is very imperishable."—JOSEPH ANDERSON, Jun., Chichester.

## CLOSTERA ANACHORETA.

BY H. G. KNAGGS, M.D., F.L.S.

I MUST again apologise for trespassing on your valuable space. It will now be my endeavour to prove, far more conclusively than I have yet done, that *C. anachoreta* was taken by Mr. Sidney Cooper some time before my Folkestone captures were made.

In my former communication I quoted Mr. Newman's statement, Zool. 7681, as follows:—

"THIS BEAUTIFUL LARVA WAS FIRST FOUND BY MY FRIEND MR. SIDNEY COOPER, FEEDING, AS HE BELIEVES, ON *Salix caprea* (SALLOW), afterwards by Dr. Knaggs, &c."

Mr. Greene now asks what that has to do with his argument? My answer is—Everything.

He next asks, "Further, what are we to gather from the words in small capitals? Is it that Mr. Cooper, who 'believes' that his larva was feeding on willow, was the first discoverer of the insect, and not Dr. Knaggs?" Certainly, what other possible meaning can the words convey?

Mr. Greene only partially quotes my sentence, in which I gave reasons for omitting a certain passage which I considered irrelevant



to the question. It should run thus:—"The remainder is omitted because it is quite irrelevant to the question, and moreover would require the publication of explanatory notes from the 'Zoologist' and 'Intelligencer' of the period, thereby occupying space quite unnecessarily."

Would not the vast majority of people have taken the above as a warning to be cautious,—to find out what those explanatory notes meant, which were to be found within the pages of the 'Zoologist' of the period, before rushing into print with an imperfectly quoted extract from that omission?

Mr. Greene apparently took no heed of my warning; had he done so, he would certainly have modified his last paper very considerably, or possibly have left it unwritten, thereby saving himself humiliation, and me an unpleasant task. But what did he do? He evidently jumped to the conclusion that I withheld the matter in question because it told against me, and accordingly he blindly reproduced it regardless of consequences.

I will tell him what his rash act has done for him:—1. It has revealed the spirit in which he is carrying on this controversy, by showing the eagerness with which he seized upon a statement which he thought was likely to injure my reputation. 2. It has dragged before the public the apology of a gentleman who has passed away from us, and which was therefore sealed to me. 3. It has provided me with the important evidence of the late Mr. Henry Doubleday, which I could not otherwise have used. And all for what? for the passing gratification of raking up against his "friend and correspondent" an old, long-forgiven, long-forgotten, charge, which was contradicted, apologised for, and withdrawn more than thirty years ago.

This is the item which he considers "very relevant indeed": "The two localities given for the insect are certainly calculated (if not designed) to lead our assiduous larva-hunters astray; in the 'neighbourhood of London' is literally untrue; 'home counties' is within the verge of truth, but conveys no idea whatever of the exact truth. As I have been favoured with a knowledge of the spot under the seal of secrecy, I can say no more on the subject" (Zool. 7682). What then! The first locality was given by a writer in the 'Annual,' the second was mine, the third was Mr. Cooper's.

In the early part of the year preceding the appearance of the above extract, Mr. Greene, if he had taken the trouble to look, would have found the following note from me: Zool. 6904 (1860). "'Home counties' is the only locality I have ever publicly given for *C. anachoreta*, and the only one for which I will be responsible. The statement in the 'Annual,' that I took it in the neighbourhood of London, was published without my knowledge or sanction." And if he had made a further search, he would have found, Zool. 7717 (1861), the apology for having made the



statement, and the retraction of the same. Included within that apology, he might also have seen the recorded testimony of the late Mr. Doubleday, which, by Mr. Greene's precipitate action, has been released from its grave, and is now available for my purpose. It is as follows:—

“MR. SIDNEY COOPER WAS NOT AWARE THAT THE INSECT HE BRED WAS *C. anachoreta*, UNTIL, SOME TIME AFTERWARDS, HE SAW MY SPECIMENS OF *C. curtula*, WHICH HE SAID WERE DIFFERENT FROM THE INSECT HE HAD BRED, WHICH WAS THEREFORE NO DOUBT *anachoreta*.”—(Zool. 7717). N.B.—The small capitals are mine.

I, myself, have recorded ('Annual' for 1864, page 130) the fact that the larva of *C. anachoreta* was first found by Mr. Sidney Cooper; and the same statement occurs in our most recent standard work on the British Lepidoptera, *viz.*, Newman's 'British Moths,' p. 223, published 1869.

Although, as already stated, Mr. Cooper is a stranger to me, I took the liberty of writing to him at the time I was preparing my last communication, but, owing to that gentleman being abroad, there was a delay in receiving his two replies. The first was much to the effect of the note at page 112, Entom. 1888; the second was as follows:—

“Unless the memory of our mutual friend Mr. Lynch prove better than my own, I fear that the two paragraphs from the 'Zoologist,' which you kindly send me, contain all the reliable information which is now attainable in respect to my capture of *Clostera anachoreta*; their very existence had faded from my memory, and, now that I have read them, I cannot feel the same confidence in some of my impressions that I did when I last wrote. Of *their* accuracy, however, I have no manner of doubt, for they together furnish a record of the circumstance which was made at the time, and are not emanations from a precarious memory, which I fear, on many points, cannot be relied upon, after a lapse of over thirty years. I DO NOW REMEMBER HAVING THE INSECT FOR SOME TIME IN MY CABINET BEFORE I KNEW WHAT IT WAS, AND THAT I SUPPOSED IT WAS *curtula*, OF WHICH I HAD NO SPECIMEN, ALTHOUGH I HAD FINE SPECIMENS OF *reclusa*. IT MUST HAVE BEEN MY EXAMINATION OF MR. HENRY DOUBLEDAY'S COLLECTION WHICH FIRST MADE ME AWARE OF MY ERROR.”

The small capitals are mine, but the emphases on the words “their” and “do” are Mr. Cooper's.

As it seems to me hardly possible that any unprejudiced person can consider that the evidence produced is outweighed by Mr. Greene's unsupported ipse-dixit, I presume that no one will dispute the fact that Mr. Cooper was the original captor of *C. anachoreta*.

I now invite Mr. Greene to explain how he reconciles the theory of importation with Mr. Cooper's captures.

Camden Road, March 7, 1893.

CLOSTERA ANACHORETA.—Thirty years' experience in the work of Entomology has led me to think the *Clostera anachoreta* should retain its place in the list of British Lepidoptera, notwithstanding since the year 1863 it has, either on account of its seclusive habits escaped the observation of collectors, or something has occurred to remove it from the locality in which its capture was first recorded. If every species which comes and goes is to be expunged from the list, surely *Polyommatus dispar*, *Ocneria dispar*, and *Aporia crataegi* can no longer rank with our indigenous species. *Nola albulalis* presents a case almost parallel to that of *C. anachoreta*. Here we have an insect the habitat of which barely exceeds three acres in extent. Thirty years ago it could have been taken in abundance; now it is so scarce that it would be difficult for a hard-working collector to secure a series for his collection. If, then, *N. albulalis* soon disappears from this country (which is more than probable), shall we have to regard it also as an "imported" species. Dr. Knaggs's friend, to whom he so liberally presented the larvæ of *C. anachoreta* at the time of making the discovery at Folkestone, does not seem to be over grateful to him; when having bred a sufficient number of specimens to find it a "drug," he mildly suggests that the species had been "imported." Since the year 1863 *C. anachoreta* has apparently disappeared from Folkestone, and with it, Mr. T. H. Briggs informs us, went *curtula*, *reclusa*, and other species. Now on the 19th of December, 1863, an awful gale blew the plantations to "smithereens." It is recorded in the 'Folkestone Chronicle' of that date, when two colliers went down with all hands. The poplar plantations were on the beach. Mr. Greene pays a high tribute to the entomologists of his early days. No doubt at that time they were becoming more enlightened; but who will grant him that they knew as much as the ardent young students of the present day? They had not the facilities we now possess. About the year 1841 the lepidopterist is recommended to take a well-warmed empty sugar hogshead into a wood or meadow, as an unfailing lure for Noctuæ (Newman's 'Grammar of Entomology,' p. 99). Things are managed rather differently now. If *C. anachoreta* has gone from Folkestone, it rests with the lepidopterists working in the neighbourhood of Deal and Walmer,—its other recorded localities,—to decide whether it no longer exists with us in its wild state. Let us hope that further search will prove that it is not yet extinct.—H. A. AULD.

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## AN EASILY CONSTRUCTED MOTH-TRAP.

By E. F. STUDD.

FIRST, make a flat bottom of wood, 24 by 12 inches. To this bottom fasten two sides of wood, shaped as in fig. 3; from A to B and C to D being 20 in., rising to 24 in. at E, the point E being exactly in the centre. From B to C is of course 24 in. In each side make a square hole large enough to insert the arm (with coat-sleeve); the side nearest the front being about 8 in. from the front.

The hole must be covered by a small trap-door, T, running in a frame, so that it can be pulled out at the top by a small knob in its centre. On the inside of each side nail two strips of wood from D to J, two from K to M, the higher one being slightly longer than the lower, and two, one from the point of the highest strip at K, and one from the point of the lowest strip at K, to L. These strips are for the glasses to slide between. The two from D to J should have a small cross-piece or plug at J, to prevent the glass falling any lower; the same at L, but this cannot be plugged till after the glass is in. The point J is  $12\frac{1}{2}$  in. from the back, and  $7\frac{1}{2}$  in. from the bottom; the point K is 2 in. in front of J, or  $14\frac{1}{2}$  in. from the back and  $7\frac{1}{2}$  in. from the bottom; the point L is 2 in. under the lowest strip at K; the point M is clear 2 in. from the bottom.

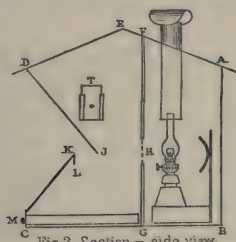


Fig. 2. Section - side view.

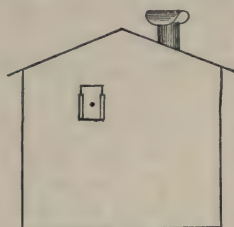


Fig. 1. General side view.



Fig. 5.

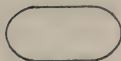


Fig. 4.

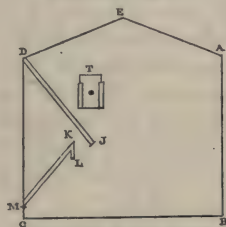


Fig. 3. View of side - inside

Having fastened the sides on to the bottom, next put on the back. This is of wood, and is made of two equal halves, the lower half being firmly nailed to the sides and bottom, and the upper half being fastened to the top of the lower by a pair of hinges, so that it will fall down over the lower half, or can be fastened up to the back of the trap by a couple of wooden buttons, which should be fixed on a strong wooden bar, nailed across the top from A on the one side to A on the other. The top half of the back, when open, will enable the lamp (an ordinary duplex, burning crystal oil) to be inserted or removed.

Next, nail in a wooden partition the whole breadth of the trap from F to G, having a piece of glass 6 in. square inserted in the centre of its breadth, so that the centre of the glass comes opposite the point J,—i. e., about  $7\frac{1}{2}$  in. from the bottom. This partition should be 9 in. from the back, which allows ample room



for the lamp. It should be slightly higher than the back, so as to meet the roof which slopes from E to A. Nail a strong bar from E on one side to E on the other. Then slip a piece of glass, which must be as wide as the trap inside, and deep enough to reach from D to J, in between the slips of wood at D. Then slip a piece of glass of the same width, and deep enough to reach from M to K, in at the point M, and a piece of the same width, about 2 in. deep, in at the point L; plug the slips at L, and across the front from D on one side to D on the other, and M on one side to M on the other, nail strong wooden bars. These bars will firmly fix the glasses from D to J and M to K.

A drawer should then be made having a zinc bottom, and sides, front and back of wood. The front should be just deep enough to allow the drawer to shut in between M and C; the sides and back should not be quite as deep as the front. In the centre of the front screw a handle.

The trap is now ready for the roof. This is simply a sheet of zinc large enough to project over the front, back, and sides, to keep off rain, and should be firmly nailed to the cross bars at A, E, and D, and to the partition at F. If not nailed tight to this partition throughout its entire breadth, there will be chinks through which insects will get into the back of the trap and be injured by the lamp. Before fixing, a hole should be cut in the zinc to admit the chimney; the hole should be round, and as nearly as possible the exact size of the chimney, to prevent rain from getting in, and should be puttied round when the chimney has been inserted. This is merely a piece of zinc rolled and fastened together by rivets; it should be just long enough to allow the lamp chimney to be placed up under it, as in fig. 2. It should be put down through the roof, and fastened to it. The diameter of the chimney is 3 in.

A piece of zinc, as in fig. 4, should then be taken, and a piece of hoop-iron rivetted to each side of it in the centre. It should then be drawn down double (see fig. 5), and the pieces of hoop-iron fixed to the chimney, so that the piece of zinc stands clear of the chimney, forming a sort of shade or cap to it, and the trap is complete.

As I said before (Entom. 15), and as will be seen from the above sketch (fig. 2), which I have taken the liberty of copying from Entom xxiii., the trap is Mr Christy's trap with very slight additions, the principal being—

(1.) The drawer. I find this no trouble at all beyond the bruising of the laurel leaves with which it is filled. A piece of muslin is stretched over the leaves to prevent moths falling among them. The reason the sides and back should not be so deep as the front is, that if they were, and the muslin stretched tight over them (which I find is better than letting it rest on the

damp leaves), when the drawer is pulled out the moths would be caught by the cross bar above the drawer at M.

(2.) The piece of glass from K to L. This joins the piece from K to M, and, from my own observation, prevents many moths, which otherwise would crawl up the glass and escape, from doing so.

(3.) Placing the upper point of the lower glass, or K, behind instead of under the lower point of the upper one, or J. This does not in any way check the moths from going in, but tends much to prevent their getting out, as if they fly about there is really no opening, as they fly against one or other of the glasses.

Of course I do not for a moment pretend that the trap is perfect, or that many improvements may not be introduced, and I fancy a great deal more use might advantageously be made of zinc in its construction. Again, I do not suggest that the measurements are the best; all I can say is, that they are those I have used, and they have answered.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 73.)

### RHOPALOCERA.

#### PIERIDÆ.

*PIERIS BRASSICÆ*, L.—Abundant, and generally distributed. Irish specimens are not divergent to any extent from those of Great Britain. The black apex of fore wing is often dusted with white scales. Markree Castle, Sligo, and elsewhere. Mr. Russ has a female from that neighbourhood, in which the black apex extends in streaks interiorly towards the upper spot. Mr. Barrett records ('Lep. of Brit. Is.') "a very small form from the North of Ireland." Usually the Irish insect is both large and strongly marked.

*PIERIS RAPÆ*, L.—Generally distributed, but the least common of the three species of *Pieris* found in Ireland. Variable in the size and strength of the black markings in both sexes, and in both broods. The apical shading is sometimes almost obsolete, and the spots reduced. Of the varieties described by Mr. Dale, in his 'History of British Butterflies,' I have taken var. *b*, with pale cream-coloured wings; and one forced in winter has this peculiarity, and inconspicuous black spots and apex (var. *c*).

Var. *metra*, Stph.—A very fine example of this variety, devoid of all markings on the upper side of fore wings, was taken by Mr. Fetherston H. (cf. Newman, 'Brit. Butterflies,' p. 161).



A remarkable male specimen of this butterfly, with the under side of hind wing and apex of fore wing of a bright canary-yellow, was sent me by Mr. R. F. Barrington, taken on 19th January last, in the cabin of N. Arklow Light-ship. The apex, costa, and spot on the upper side of fore wings are faintly black. I presume it is a hybernated specimen that was attracted on board in the autumn.

*PIERIS NAPI*, L.—Widely distributed, and very common. It varies widely in the markings of both broods, but the horeomorphism does not seem to me to be so marked in Ireland as in Great Britain. The first brood is generally characterised in the male by a somewhat darker apex and spot on fore wing, and in both sexes by a wide suffusion of the nervures on the under side. Females also not unfrequently occur with a dusky suffusion on the bases and all the nervures of the upper side of all wings, the spots being also blurred and fused with the shading of the nervures; thus in some degree approaching the alpine var. *bryoniae*, which is usually ochreous in colour. I have specimens from Monaghan and Tyrone in Ulster; Markree, Sligo, in the West; Killarney in the South; and elsewhere, some of which have the white ground faintly tinted with primrose. I have also a male from Killarney, taken in May, with a very black apex, but no spot. The second brood, however, in Ireland, frequently preserves, to a certain extent, the type of the first emergence, containing individuals with strongly suffused nervures on the under side. This may, perhaps, be the result of a cold sunless summer. There is a form which I have taken freely in August at Minehead, Co. Waterford; Favour Royal, Co. Tyrone, and elsewhere, described by Mr. Barrett as follows:—"In the North of Ireland, especially in the second brood, females occur with the apex strongly black, spots large, and nervures above very much blackened; and very large males with the apex deep black, and a large round spot on the upper side of fore wing. In all these dark forms the green veins below are very dilated and blackened in proportion." The specimens I have agree with the above description, except that the nervures of the under side are less blackened than in the first brood, and those of the upper side of hind wing not shaded, which throws the strongly-marked fore wing into great relief. In most specimens the apical blotch is quadrangular, but in two the apex is merely broadly streaked with the dark nervures. According to Mr. Dale ('Hist. of Brit. Butterflies') this form is the var. *napææ* of Esper. Others hold that the only character attached to this varietal name is the slight shading of the nervures of the under side of hind wing. An aberration exists in both sexes and broods, in which the under side of hind wing is bright primrose; and this occurs more frequently in the second brood. Two specimens of a very beautiful yellow aberration have been taken, similar to the one described



by Mr. Barrett, from the Norfolk fens. One of these was taken by me in August at Redhills, Co. Cavan, and presented to Mr. Jenner Weir. The other was given me by Miss Reynell, of Killynon, Westmeath. Both were female. Ground colour a saffron-yellow, with bases and all the nervures to the fringes broadly suffused with grey. Apical blotch and spots large, dark, but shaded off at the edges. Under side of the hind wing and apex of fore wing a deep yellow-ochre, approaching orange; nervures shaded with greenish grey. A male of this aberration has been taken in Scandinavia, on the authority of M. Schöyen ('Entomologisk Tidsskrift,' 1885, "Resumés," p. 214):—"L'auteur norvégien mentionne, de la generation d'automne de *Pieris napi*, un mâle entièrement jaune soufre, offrant une intéressante analogie avec la variété *novangliæ* de *P. rapæ*." Mr. Mosely records a similar male form of *P. brassicæ*. These parallel forms are worthy of a distinct designation, and I would propose the name of *ab. flava* of their respective species.

*EUCHLOË CARDAMINES*, L.—Generally distributed, and often very abundant. "In May, 1860, I observed this species in myriads at Sligo, reminding me of the migrating clouds of tropical *Callidryas*" (B.). Dwarf individuals of both sexes occur not infrequently, flying at the same period as the rest; as is also the case with its southern congener, *E. eupheno*, in Algeria, and *euphenoides* along the Mediterranean littoral. I have seen no hermaphrodites from Ireland, but they may be expected to be found when there are more observers, as gynandromorphous forms have been frequently noted in this and other species of *Euchloë*. Mr. Barrett notes a specimen from Co. Sligo with a yellowish ground colour, thus reproducing a character of *E. eupheno*. I have not seen any variations worth notice. The female has the upper side of hind wings tinged more or less with dirty yellow. The discoidal spots vary much in size in both sexes, occasionally being very large and lunular in shape. This does not seem to be a topomorphic aberration. The emergence of this butterfly is often considerably retarded in the colder districts of Ireland, where it sometimes lingers on late into summer.

*LEUCOPHASIA SINAPIS*, L.—Very local. Mr. Birchall notes that "only a June brood has been observed." Mr. Sinclair mentions the capture of two specimens near Enniskillen at the end of May, 1875. My series from Galway are characterised by the apical blotch being dark and large in the male, and the ground colour of the wings white, and not cream-coloured. They are of full size, and not divergent from the normal type. The Rev. R. M'Clean, of Sligo, took one specimen on the wooded shores of L. Gill. It is remarkable for the dull ochreous yellow tint of the upper side, somewhat dingier than the second

emergence of *P. rapæ*. The shadings at bases and the apical blotch of fore wing normal. Under side:—Ground colour as upper, but those portions which in the type are tinged with primrose are in this specimen a pale but well-marked buff. Grey shadings normal. Localities:—Co. Galway, at Claring Bridge, abundant (*B.*); and at Castle Taylor, abundant (*Miss N.*). Near Enniskillen (*S.*). Queen's Co., near Borris in Ossory, one specimen (*F. N.*). Co. Sligo, L. Gill, one specimen (*M'C.*). Killarney, abundant (*B.*).

*COLIAS HYALE*, *L.*—No capture of this species in Ireland has been recorded since 1868, when it occurred sparingly in the South and at Howth, migrating thither with much larger numbers of *C. edusa*.

*COLIAS EDUSA*, *Fb.*—"Common in some seasons on the south and east coast; occurs more rarely north of Dublin. In profusion at Killarney in August, 1865" (*B.*) In June, 1876, Mr. Sinclair states that he met with worn females, and in the autumn the insect came out in large numbers. Mr. Campbell made a similar observation at Derry. In 1877 it was again very common in Ireland, as well as England; and among the places it was observed were Glengarriff, Cork, Bray Head, Howth, Westmeath, Fermanagh, Sligo; and I observed one near Monaghan in Ulster; Armagh, one (*J.*); but it was most numerous in the South, and was also very abundant near Ennis, Co. Clare. In 1885 it was sparingly distributed in the Co. Cork, as at Desertserges, Bandon (*L.*); in Co. Wexford, "near New Ross" (*B.-H.*); abundant at Tallow and Lismore (*L.*), Co. Waterford; Kenmare, &c. In 1888 it was again seen in various places in the South. In 1892, when England was visited by a large migration of this insect, only a small contingent seems to have crossed the Irish Sea, probably deterred by the inclement weather which prevailed here. Mr. M. Fitzgibbon took one at Howth; two were taken at Clontarf, Co. Dublin, by Mr. Vernon; and a few noticed in southern counties.

The female var. *helice* occurred sparingly with the type in the chief migrations; and I have one taken by Mr. Sinclair at Kingstown in 1877.

*GONOPTERYX RHAMNI*, *L.*—Very local in Ireland. At Killarney, Mr. Birchall took a few specimens on the road from Mucross to Mangerton; and I have met with it sparingly at Dinas. Co. Galway, Ardrahan (*Miss N.*), and N.E. to L. Ree; and in Connemara, at Glendalough, Kylemore, Clydach on the east shore of L. Corrib (*Hon. E. L.*), and Moycullen (*Miss R.*); an island in L. Ree, Co. Longford (*U.*)

#### NYMPHALIDÆ.

*ARGYNNIS SELENE*, *Schiff.*—One at Edenderry, King's Co., by Mr. Henn; identified by Mr. Sinclair in 1877.

*ARGYNNIS LATONIA*, L.—One specimen “seen on the wing” by Mr. Birchall at Killarney, “in the lane leading from Mucross to Mangerton, near a limestone quarry on the left of the road, August 10th, 1864” (*E. M. Mag.* i. 109).

*ARGYNNIS AGLAIA*, L.—Widely distributed round the coast. I only know of its capture inland at a few localities in the Cos. Cork and Galway. In the North, on the coast near Derry (*W. E. H.*); abundant (*C.*). In Antrim and Down, at Portballintrae, Portrush, and Dundrum (*Bw.*). Co. Wicklow, Bray Head, and Greystones. In the South, Westwood Rosscarbery (*D.*); Cork, abundant (*Holt*); Bandon, very abundant (*L.*); Desertserges, twelve miles inland (*L.*); near Kenmare (*Miss V.*). Co. Galway, at Ardahan, &c. (*Miss N.*).

*ARGYNNIS ADIPPE*, L.—A few taken in Co. Galway in 1887 (*R. E. D.*).

*ARGYNNIS PAPHIA*, L.—“Very abundant at Killarney and the County of Wicklow” (*B.*). Is found in almost all the wooded districts of Ireland that I have visited, and frequently in considerable numbers. Irish specimens are large and brilliant in colour, and I have noticed no remarkable varieties. In the fulvous subcostal space near the apex of fore wing, usually devoid of any marking, there is occasionally a suggestion of the dark blotch presented by the female. Abundant in the wooded peninsula of Ards, in the extreme North of Donegal (*C.*), and Cloghan near Stranorlar. At Derry (*W. E. H.*). Favour Royal, Co. Tyrone; Farnham, Co. Cavan; Westmeath, at Cromlyn (*Mrs. B.*); and generally in the Co. Cork (*Holt*); Bandon, very abundant (*L.*). New Ross, Wexford (*B.-H.*), Sligo, Russ, and Markree. In the Cos. Fermanagh and Dublin, &c.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 48.)

### *Dugaria hypophæa*.

*Alamix hypophæa*, Guenée, Noct. iii. p. 4, n. 1323 (1852).

*Homoptera plumipes*, Walker, Lep. Suppl. 3, p. 888 (1865).

North India. In Coll. B. M.

### *Xylis*, Guen.

#### *Xylis ustipennis*.

*Homoptera ustipennis*, Walker, Lep. Het. xiii. p. 1071, n. 41 (1857).

*Letis incipiens*, Walker, *l.c.*, p. 1266, n. 9 (1857).

St. Domingo. Types in Coll. B. M.



*Homoptera, Boisd.*

The type of this genus is *H. putrescens*, generally admitted to be identical with *H. lunata* of Drury, although the description would do equally well for two or three other species. The *H. lunata* of Cramer is a distinct species = *H. viridans*, Guen. (Cramer's locality alone, apart from differences in the pattern between his figure and Drury's insect, would indicate this).

Walker's *H. edusa* is not the well-known variety of *H. lunata*, figured by Drury, but is = *H. calycanthata*.

*Homoptera lunata.*

*Phalaena lunata*, Drury, Ill. Exot. Ent. i. p. 40, pl. 20, fig. 3.

*Omoptera putrescens*, Boisduval, in Cuvier's Règne Anim. p. 522, larva, pl. 89 (1829).

Var. *Phalaena edusa*, Drury, l. c., ii. p. 42, pl. 24, fig. 4.

*Homoptera marginalis*, Walker, Lep. Het. Suppl. 3, p. 878 (1865).

United States. In Coll. B. M.

The specimen referred by Walker to *H. viridans*, Guen., is *H. lunata*. I do not understand why Grote has given the variety *edusa* priority over Drury's earlier name.

*Homoptera minerea.*

*Homoptera minerea*, Guenée, Noct. iii. p. 15, n. 1339 (1852).

*H. involuta*, Walker, Lep. Het. xiii. p. 1055, n. 7 (1857).

*H. lineosa*, Walker, l. c., p. 1056, n. 9 (1857).

Var. *H. sexplagiata*, Walker, Lep. Het. xiii. p. 1064, n. 27 (1857).

North and South America. In Coll. B. M.

This is like a smaller form of *H. lunata*; the costal margin of the primaries is comparatively shorter, but the coloration, pattern, and variation are almost identical.

Walker's variety *sexplagiata* was also identified by him as *H. minerea* and *H. obliqua*, Guen., though the white patches on the primaries are not mentioned in either of that author's descriptions.

*H. exhausta* of Walker (not Guenée) is *H. viridans*, Guen. The two species are nearly allied; but, I think, distinct.

*Homoptera viridans.*

*Homoptera viridans*, Guenée, Noct. iii. p. 13, n. 1336 (1852).

*H. exhausta*, Walker (not Guenée), Lep. Het. xiii. p. 1053, n. 2 (1857).

*H. viridisquama*, Walker, l. c., xv. p. 1797 (1858).

St. Domingo and São Paulo, Brazil. In Coll. B. M.

*Homoptera fictilis.*

♀ *Homoptera fictilis*, Guenée, Noct. iii. p. 10, n. 1330 (1852).

♂ *H. quadulpensis*, Guenée, l. c., n. 1331.

♀ *H. terrosa*, Guenée, l. c., p. 11, n. 1332.

*H. gradata*, Walker, Lep. Het. xiii. p. 1060, n. 17 (1857).

*H. posterior*, Walker, l. c., n. 18.

St. Domingo, St. Vincent, and Jamaica. In Coll. B. M.

*H. calycanthata*, Sm. Abb., and *H. horrida*, Hübn., have been confounded by Walker and others; but, although they are quite distinct, the latter appears to me to be nearly allied to *H. duplicata*, Beth. (a species which must stand next to *H. obliqua*, Guen.), and I fail to see any reason why I should adopt Grote's generic separation of it from the other species of *Homoptera*.

*Homoptera cingulifera.*

*Homoptera cingulifera*, Walker, Lep. Het. xiii. p. 1056, n. 10 (1857).

*H. intenta*, Walker, l. c., p. 1070, n. 39 (1857).

*H. woodii*, Grote (see Check-List, p. 42, n. 1306).

United States. Types in Coll. B. M.

*Homoptera declarans.*

*Homoptera declarans*, Walker, Lep. Het. xiii. p. 1057, n. 11 (1857).

*H. unilineata*, Grote (see Check-List, p. 42, n. 1313).

United States. Types in Coll. B. M.

## CAMPOMETRA, Guen.\*

*Rhubuna*, Walk.

This genus, in addition to the type, will include *R. irresoluta*, *Homoptera decessa*, *H. simplicior*, *H. integerrima*, and *H. aperta*.

*Campometra decessa.*

*Homoptera decessa*, Walker, Lep. Het. xiii. p. 1072, n. 42 (1857).

*H. trailii*, Butler, Trans. Ent. Soc. 1879, p. 40, n. 54.

Amazons. Types in Coll. B. M.

*Campometra simplicior.*

*Homoptera simplicior*, Walker, Lep. Het. xiii. p. 1065, n. 28 (1857).

*H. subrosea*, Walker, l. c., p. 1070, n. 38 (1857).

Honduras. Types in Coll. B. M.

\* *Phalæna euristea*, Cram., appears to be allied to *C. irresoluta*, and may even be a form of that very variable species.

*Campometra integerrima* = *amella*?

*Homoptera integerrima*, Walker, Lep. Het. xiii. p. 1057, n. 12 (1857).

*Eubolina stylobata*, Harvey (see Check-List, p. 42, n. 1318).

United States. Types in Coll. B. M.

The genus *Eubolina* was described in 1875, according to Scudder. It may stand, perhaps, for *E. mima* and *impartialis*; *E. meskei* is unknown to me. It seems highly probable that *R. integerrima* is the species intended by Guenée's wretched figure of *Campometra amella*, only the secondaries are represented with the fringe wholly white, whereas the description shows that such is not the case.

As *C. amella*, in any case, must be congeneric with *Homoptera integerrima*, Walker's genus *Rhubuna* must fall.

## YPSIA, Guen.

*Ypsia æruginosa*.

*Ypsia æruginosa*, Guenée, Noct. iii. p. 17, n. 1342 (1852).

United States. In Coll. B. M.

Walker placed an example of this species under *Phæocyma lunifera*. Grote regards *Y. æruginosa* and *umbripennis* as mere varieties of *Y. undularis*. Perhaps he is right; but they are more easy to distinguish than many N. American species, the distinctness of which is stoutly and indignantly maintained.

Guenée having adopted Hübner's genus *Anthracia* for two species not included in the group by the author of the genus, Grote very rightly renamed Guenée's group. He apparently intended to call it *Pseudanthracia*, but in the Check-List it is spelt *Pseudanthrœcia*, and I do not find it corrected in the errata, though in the list of genera it stands *Pseudanthracia*. I prefer to adopt the latter, as being obviously more correct.

## PSEUDANTHRACIA, Grote.

I fail to see any justification for separating *P. cornix* as a species from *P. squammularis*. The only character of apparent value given by Guenée is the length of the third article of the palpi; but this does not hold, and I am inclined to think that his specimen was imperfect.

## PRAXIS, Guen.

*Praxis porphyretica*.

*Praxis porphyretica*, Guenée, Noct. iii. p. 29, n. 1355, pl. 18, fig. 10 (1852).

*P. inordinata*, Walker, Lep. Het. xiii. p. 1088, n. 4 (1857).

Tasmania. In Coll. B. M.

Walker's type is simply a faded example. The species varies



from the normal red-brown colouring to a bluish slate colour, most marked on the primaries.

*Mamestra aterrima*, Walk., belongs to this genus.

#### HYPOGRAMMIDÆ.

I think it doubtful whether this is really a distinct family from the preceding.

*Calliscotus bowreyi*, Butl., from Jamaica, is clearly a Geometrid, and belongs to the genus *Pterocypha*, H.-Sch.

#### *Hypogramma damonia*.

*Phalæna damonia*, Cram., Pap. Exot. iv. pl. 324, figs. B, c (1872).

*P. capensis*?, Cramer, l. c., ii. pl. 167, fig. c (1779).

*P. sulima*, Stoll, Suppl. Cram., pl. 40, figs. 5, 5c (1791).

South America. In Coll. B. M.

There can be little doubt that Cramer's figure of his *Phalæna capensis* was taken from a bad specimen of this species; but it would be preposterous to call an American species *capensis*.

#### CÆNIPETA, Hübn.

##### *Cænipeta serapis*.

*Phalæna serapis*, Cram., Pap. Exot. iv. pl. 396, fig. f (1782).

*Cænipeta lobuligera*, Guenée, Noct. iii. p. 32, n. 1360 (1852).

*C. aniloba*, Guenée, l. c., p. 33, n. 1361 (1852).

*C. columbina*, Walker, Lep. Het. Suppl. 3, p. 892 (1865).

*C. lilacina*, Butler, Trans. Ent. Soc. 1879, p. 44, n. 62.

South America. In Coll. B. M.

When I described the Amazon examples, I had little idea of the variability of the *Noctuities*. My notes on this species show how little the named forms must have differed, since their authors confounded them together.

(To be continued.)

#### CAPTURES AND FIELD REPORTS.

THE SEASON OF 1892 AT RINGWOOD. — Insects have not been so abundant for at least ten years, here in the south, as they were last year. Captures at sugar and ivy were much above the average; and some good things have fallen to my lot in consequence. I may add that from March to the middle of November insects were plentiful. Amongst Rhopalocera we have certainly had an immigration of at least three species; of *Colias edusa* and *Vanessa cardui* there seems little doubt, and I think the same holds good of *V. atalanta*, although there is not much said of this species in respect to migration. Every season I collect all the larvæ of *V. atalanta* that I can find for varieties. During 1890 and '91 they were local and not above the average, but in 1892 I found them in immense numbers every-

where, and in company with *V. cardui*. I usually see a few imagines in June each year, but in June and July, 1892, they were abundant. I think these facts favour the supposition that *V. atalanta* is a migratory species. All the three above-named species appeared here simultaneously the first week in June, and within a fortnight they had greatly diminished, although still abundant; doubtless many went further inland. I was much amused and surprised at netting specimens of *V. cardui* (in the spring) between eight and nine o'clock p.m., several times mistaking them for moths, but did not notice this habit in the autumn, doubtless through the days being so short. *V. io* was fairly common in the larva stage, but scarce during the spring and autumn. *V. urtica* was unusually scarce. The Forest butterflies were in their usual numbers, with the exception of *Gonepteryx rhamni*. *Argynnis paphia* var. *valesina* was plentiful as usual. The following species, among others of lesser note, I took at sugar during June, &c.:—*Caliginea miniata*, a few. *Gonophora derasa*. *Cymatophora or*, one. *Acronycta ligustri*, and a good series of *Leucania turca*. *Caradrina alsines* and *blanda*, common. *Cosmia affinis*, local. *Triphæna fimbria*, few. *T. interjecta* and *T. subsequa*, one. *Aplecta herbida*; I obtained a good supply of ova of this species, from which a lot of larvæ emerged; some pupated, and the perfect insects are coming out. I kept the larvæ indoors and fed them with dock leaves; about forty I had to put out of doors to hibernate, as they refused to eat, but they are now nearly full-fed. *Cerigo cytherea*, scarce. *Mamestra albicolon*, one. *M. abjecta*, one. *Miana literosa*, scarce. *M. strigilis* and vars. *M. furuncula*, in great variety. At ivy every beat brought down numbers; when the lamp was brought forward it was astonishing to see such a living mass, some species were in thousands. I have succeeded in taking some good varieties. *Anchocelis pistacina*, scarce. *A. litura*, common. *Xanthia ferruginea*, *Orthosia lota*, and *O. macilenta*, very abundant. *Xanthia fulvago*, few. *Scopelosoma satellitia*, about the commonest. *Dasycampa rubiginea*, one. *Cerastis vaccinii* and *C. ligula*, very common; parallel varieties with light submarginal lines, &c. *Agrotis segetum* and *A. suffusa*, uncommon. *Epunda nigra*, three. *Miselia oxyacanthæ*, *Agriopsis aprilina*, common. *Dryobota protea*, two. *Phlogophora meticulosa*. *Xylina socia*, scarce. *X. ornithopus*, common. *Plusia gamma*. *Larentia siterata* (*psittacata*), about a dozen. Several species which usually occur I did not find. By other means, netting, &c., the following is a partial list:—*Sphinx convolvuli*, one only. *Macroglossa stellatarum*, a few. *Hemaris bombylifformis*, common. *H. fuciformis*, scarce. *Lithosia stramineola*, in the lanes. *L. complana*, local; heaths. *L. sororcula*, few. *L. mesomella*, common. *Emydia cribrum*, scarce. *Gnophria rubricollis*, occasionally. *Nemeophila russula*. *Saturnia carпинi*, plentiful. *Bryophila perla*, from brick walls; a form bluish black all over. *Cænobia rufa*, local, amongst rushes and flying at dusk. *Dyschorista* (*Orthosia*) *ypsilon*, pupa from dried stems of various reeds in meadows. *Hydræcia nictitans*, scarce. *H. micacea*, at light. *Agrotis agathina*, local on heaths. *Xylocampa areola*, common on palings; I found one frozen and quite dead. *Habrostola triplasia* and *H. urtica*. *Erastria fasciana*, very local amongst dried sticks, &c. *Nola cucullatella*, *N. confusalis*, and one *N. centonalis*. The Geometridæ were also abundant; it required very little exertion to beat them from the trees and hedges. *Ellopiæ prosapiaria*, several; one male of the var. *prasinaria*, which I netted in Bratley Wood. *Pericallia syringaria*, *Eurymene dolabraria*, common. *Epione advenaria*, *E. apiciaria*, local. *Macaria litu-*



*rata*, very common; two broods; one var. unicolorous violet-grey, with central yellow bars upon all wings. *Scodiona belgaria*, several, *Bapta trimaculata*, scarce. *Rhyparia plumaria* and *Gnophos obscurata*, local. *Cleora lichenaria*, *Boarmia cinctaria*, *B. consortaria*, *B. roboraria*, *Tephrosia consonaria*, *T. extersaria*; nearly all the *Boarmiæ* have been common; *B. roboraria* is new to me here. *Pachynemias hippocastanaria*, two broods. *Nyssia hispidaria*, scarce. *Pseudoterpna pruinata*, abundant. *Phorodesma pustulata*, scarce. *Nemoria viridata*, local. *Acidalia emarginata*, *A. imitaria*, *Timandra amataria*, *Zonosiona punctaria* and *Z. trilinearia*, all common. *Scotosia undulata*, a few. The beautiful *Melanthia albicillata*, very common upon fir trees, but difficult to net, as they have a habit of resting well up amongst the branches. *Emmelesia affinitata*, local. *Eupithecia fraxinata*, in lanes. *E. minutata*, *E. castigata*, *E. rectangulata*, and many other pugs. Larva-beating has been quite as successful as any other mode of collecting. From oak (*Quercus robur* chiefly), I obtained *Sesia cynipiformis* commonly in stumps. *Psilura monacha*, from which I bred a good series; one male nearly black, several richly banded forms. *Trichiura cratagi* and *Pæcilocampa populi*. *Drymonia chaonia*, several; *Asphalia ridens*, *Demas coryli*, *Taniocampa munda*, *Cosmia trapezina*, one imago bred was bright red. *Sarrothripa revayana*, several broods. *Hylophila prasinana*, abundant. *H. bicolorana*, during May. Larva of various "thorns" and "pugs" were plentiful: *Eugonia erosaria*, *Eurymene dolabraria*, *Selenia tetralunaria*, *Himeria pennaria*, &c. From birch (*Betula alba*), *Platypteryx falcataria*, *Lophopteryx camelina*, *Notodonta dromedarius*, &c., *Geometra papilionaria*, &c. Sallows (*Salix caprea*), *Smerinthus populi* and *S. ocellatus*; *Porthesia auriflua*, before hibernating. *Pygæra curtula*, very low down. *Cerura furcula*, common. *Notodonta ziczac*, *Scoliopteryx libatrix*, *Earias chlorana*, *Pygæra reclusa*, common upon dwarf willows. Beech (*Fagus sylvatica*), *Dasychira pudibunda*, *Deprana unguicula*, *Demas coryli*, abundant during September and October; all sizes. *H. prasinana*, common. Blackthorn (*Prunus spinosa*), *Bombyx quercus* and *Lasiocampa quercifolia*, both common. From various other food-plants I have taken the following:—*Sphinx ligustri*, holly. *Smerinthus tilia*, *Hemaris bombylifomis*, *Gnophria rubricollis*, from all forest trees: of the latter I have several pupæ; the larvæ were fed upon yellow and grey lichen found upon walls, &c. *Callimorpha dominula*, local, but plentiful. *Arctia villica*, common. *Phagmatobia fuliginosa*, *Dasychira fascelina*, *Cossus ligniperda*, cases of *Psyche villosella* and *Fumea nitidella*. *Acronycta alni*, two. *Xanthia fulvago*, from willow blooms. *Cosmia affinis*, *Gortyna flavago*, from stems of various plants. *Triphana interjecta*, common. *Calocampa exoleta*, docks. *Anarta myrtili*, common. *Plusia chrysis*, two broods. *Cilix glaucata*, *Pseudoterpna pruinata*, common. *Pericallia syringaria*, *Urapteryx sambucaria*, still feeding, Jan. 20th. Insects were fairly common upon willow bloom; I took a few each of *Panolis piniperda*, *Taniocampa gracilis*, and *Pachnobia rubricosa*, and of course many of the commoner kinds. I should imagine, from the great numbers of larvæ there were in the autumn, that the prospects for this year are favourable, and I trust it may be so, for the sake of all collectors.—J. HY. FOWLER; Ringwood, January 20, 1893.

*ZYGÆNA MELILOTI*?—In the Entom., vol. xxii., No. 318, I gave an account of "*Lepidoptera* of two Dorset chalk-hills," and noted *Zygæna trifolii*. Mr. Charles Gulliver, who has seen the series of this species,



says undoubtedly two of them are *meliloti*. Here is a chance for the Dorset collectors. As I have a good series of true *meliloti*, I should be happy to send them to an expert for identification.—J. HY. FOWLER.

SPRING LEPIDOPTERA AT CHESTER.—*Phigalia pedaria* (= *pilosaria*) is unusually common on our gas-lamps, and a male *Nyssia hispidaria* emerged from the pupa this morning. *Hybernina defoliaria* still continues to appear on the lamps and in my breeding-pots.—J. ARKLE; 2, George Street, Chester, February 18, 1893.

CAPTURES AT LIGHT.—Since my last list of Lepidoptera taken in the moth trap (Entom. 15), I have, by the same means, secured the following:—*Pæcilocampa populi*, three females and a number of males; *Cerastis vaccinii*, numerous examples; *Asteroscopus sphinx*, twenty males; *Himeria pennaria*, several males; *Hybernina defoliaria*, a large and varied series of males; *H. rupricapraria*, two males; *H. leucophæaria*, two males; *Cheimatobia brumata*, numerous males.—E. F. STUDD; Oxtou, Exeter, February 7, 1893.

"A SHOWER OF CATERPILLARS."—The following extract is from the 'Liverpool Echo' of March 6th:—"A letter from Salins, in the Department of the Jura, relates that on the 22nd of February the inhabitants were astonished to find that snow, which was falling fast, was mixed with innumerable living caterpillars. After the storm had blown over, the ground was, it is said, literally covered with them. It is supposed that the storm, having come from the south-west, had brought the caterpillars with it from Madeira, the Canary Islands, the Azores, or Cape Verde. If that were really the case, the caterpillars, which are described as of all sizes, had been held in suspension in the air for some thousands of kilometres."—J. ARKLE; Chester.

RHOPALOCERA FROM THE ALPES-MARITIMES. — I am reliably informed that the undermentioned species of Rhopalocera have been either seen or taken on the wing near Nice, viz.:—*Pieris brassica*, L., several seen. *Anthocharis belia*, Cr., one seen and one taken, on February 25th, by my cousin, E. C. Casey, at Cap St. Jean, near Villefranche; time, about 3, p.m. I was present on the occasion. The larval food-plant for this species (*Biscutella didyma*) I noticed in flower as early as January 22nd, this year, on the rocks at Villefranche, and facing full south. *Colias edusa*, F., one observed by the same collector on February 12th, and several since seen by me. *Rhodocera cleopatra*, L., a male example apparently just emerged from the pupa, on Mont Vinaigrier, January 28th. *Lycæna argiolus*, L., one seen on February 16th. Going back to former seasons, I find from my diary that *Papilio podalirius*, L., has been seen as early as March 29th (1891); and I have met with *Anthocharis cardamines*, L., and *A. euphenoides*, Str., both on March 28th (1890). *Polyommatus phlæas*, L. (if I remember rightly), I saw at the end of February, about five or six years ago, in a sheltered locality to the north of Nice. *Lycæna baton*, Bgstr., has been found as early as March 26th (1890),—a solitary male individual. The females usually appear about a fortnight later than the males. As regards this latter, I have always taken it commonly on Mont Vinaigrier and at St. Jean (near Villefranche), where wild thyme (*Thymus vulgaris*) abounds. It does not seem to frequent the plain much,—that is to say, I have not generally found it in hilly localities.—F. BROMILOW; Nice, S. France, March 4, 1892.

RHOPALOCERA NEAR NOTTINGHAM IN SEPTEMBER, 1892.—Butterflies seemed fairly plentiful here about the middle of last September, the *Vanessas* being in particularly strong force. At the edge of an oak wood near Widmerpool, where thistles abounded, *V. atalanta* simply swarmed. It was a grand sight to see these beautiful insects circling round the oaks, reminding one of *Apatura iris*, and, after a short flight, return to the thistle-heads. *V. cardui* was not quite so plentiful, and fearfully battered. *V. io* and *V. urticae* were nearly over, only odd ones turning up now and then. Unfortunately I missed a fine specimen of *V. polychloros*, which is a rare insect in this district. There appeared to be a late brood of *Lycena alexis* and *Cænonympha pamphilus*, as both species were quite fresh and in large numbers. Near a clover-field I took half-a-dozen fine *Colias edusa*, the females being in superb condition. A few days previously I netted a very small male on a sunflower in the garden, which is within a mile of the centre of the town on the north side.—A. R. LEWERS; Clinton House, Sherwood Rise, Nottingham.

CALYMNIA PYRALINA IN ESSEX.—I took one rather damaged example of *C. pyralina*, and one *C. affinis*, at rest on elm trees, in August, 1892.—JAS. GARROW; 3, Wolseley Terrace, Leytonstone.

BISTON HIRTARIA IN FEBRUARY.—On Friday, Feb. 17th, I took a male *Biston hirtaria* off a pear-tree trunk in my garden. I think it likely to be some time before this "record" is broken.—C. A. BIRD; Rosedale, 162, Dalling Road, Hammersmith, W., Feb. 22, 1893.

EARLY SPRING LEPIDOPTERA.—On the 20th of this month a friend of mine saw *Gonepteryx rhamni* on the wing near Gipsy Lane, Eastham. It was chased by him and two others, but managed to get away. Are there any other records of its appearance on the wing so early? On the previous day I took a male *Anisopteryx ascularia* at rest on a wood fence, in the vicinity of Wanstead. The day was very warm and bright, but rather windy.—JAS. GARROW; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, Feb. 20, 1893.

COLIAS EDUSA IN NORFOLK, 1892.—On Sept. 13th, 1892, I captured three small specimens of *Colias edusa* in the Beach Gardens, at Great Yarmouth, and saw another on the 27th. Through leaving Yarmouth in October last, and not getting copies of the 'Entomologist' regularly, I am sorry to say I was unable to report my captures so that they could have been published in their proper place in the list. I notice that there is only one record from Norfolk, and that of only one specimen, which makes the county appear to have been almost exempted from their visits.—J. E. KNIGHT; 3, Mount Joy Street, Newport, Mon., Feb. 3, 1893.

BREPHOS PARTHENIAS.—I had my first entomological field-day on Saturday last (March 11th), when I went to Delamere Forest. *Brephos parthenias* was flying about commonly in the bright sunshine, but, although we compared notes with some Manchester entomologists whom we met, not a single capture of this species was made on that day.—J. ARKLE; Chester.

VANESSA POLYCHLOROS ON THE THAMES EMBANKMENT.—As I was walking down the Embankment, about two o'clock to-day (the sun being just at the time rather powerful), a specimen of *Vanessa polychloros* alighted on the pavement, about a couple of yards from me. The insect was, I



think, perfect, and appeared very fresh. I tried to catch it, but it flew into the gardens on my left. I saw no more of it. There was, however, no mistaking the specimen, which expanded its wings right in front of me. This occurred just above Waterloo Bridge.—LAWRENCE J. TREMAYNE; 4, Lanark Villas, Maida Vale, W., March 8, 1893.

AMONGST THE COLEOPTERA ON BANK HOLIDAY.—On December 26th, 1892, the thermometer below freezing-point, the sun shining brightly overhead, the merry laughs of the skaters as they speeded past us upon the frozen Thames, all tended to make us buoyant with the hope that we should have the good fortune to find a "good thing," as we wended our way toward Iffley on this eventful morning. Soon we came in sight of some aspens; out came diggers and bottles; the rough bark was prized off, and amongst the fissures we noticed, lying in a dormant condition, *Dorytomus intermedius* and *D. vorax* in some numbers, with *Agonum gracile* and *Pterostictus minor*. Just, however, as we were in the midst of ascertaining whether certain suspicious-looking cocoons—of which there were some dozens of empty ones in the bark—were the cocoons of the hornet clearwing, we were rudely awakened to the fact that we were trespassing. As we could not persuade the keeper (*sic*) that we were doing no damage to the property whatever, we had to make tracks. A short distance further on brought us to an old decayed willow-stump, upon which we immediately set to work. *Pterostictus minor* and *niger*, *Argutor strenuus* and *diligens*, *Agonum gracile*, *Leja lampros*, and *Lopha assimile* were found in great numbers; *Carabus nemoralis* we turned out in some numbers. A number of small *Brachelytra* were found basking in the sun on the stump. *Anchomenus livens* was turned out; several specimens of this have been taken by myself in various localities near Oxford. Within five yards of us the ice was populated with skaters, and a small crowd of the genus *Homo* (young) formed around us, inquiring "what we wanted 'em for." Meanwhile we were turning out *Anchomenus* (*Clibanarius*) *dorsalis* and *albipes*, *Dromius quadrimaculatus* and *foveolatus*, *Dyschirius globosus*, *Clivina fossor*, *Errhinus acridulus*, *Harpalus æneus* and *rufipes*, *Chrysomela polita*, *Gastrophysa marginella* (in abundance), and *Haltica nemoralis*. Amongst some refuse I noticed a peculiar-looking insect, and found, on extricating it, *Oodes helopoides*, and soon afterwards *Amara familiaris* was found. A few moments later we left this profitable stump, and adjourned to some aspens close to the river, where, on scraping off the moss at the foot of the tree, we found *Dromius quadrimaculatus*, *quadrinotatus*, and *meridionalis*, *Demetrias atricapilla*, *Prasocuris phellandrii*, *Onthophilus striatus*, *Silpha* (*Phosphuga*) *atrata*, *Lathridius lardarius*, and one specimen of *Bembidium saxatile*. One specimen of a small *Trichopteryx* (sp. incert.) was noticed under moss with *Apion assimile*, and numbers of small specimens of *Brachelytra*. By this time our bottles were in a very full condition, and, as the sun was dipping below the tops of the Chilswell Hills and the wind began to feel colder, we decided to give up collecting for the day, and, having taken enough to fill up the uncompleted series, we wended our way back towards Oxford.—JOHN W. SHIPP (Assistant to the late Prof. Westwood), Oxford University Museum.

LEPIDOPTERA TAKEN AND BRED IN NEIGHBOURHOOD OF SWANSEA, 1892.—*Pieris brassicae*, *P. rapæ*, *P. napi*, *Euchloë cardamines*, all common. *Colias edusa*, fairly common, and one var. *helice*. *C. hyale*, one seen. *Gonopteryx rhamni*, not rare. *Argynnis selene*, *A. euphrosyne* and *Melitæa aurinia*, all



abundant. *Argynnis paphia*, scarce. *Vanessa urticæ*, *V. io*. *V. atalanta*, *Pararge megæra*, *Satyrus semele*, *Epinephele ianira*, *E. tithonus*, *Cænonympha pamphilus*, *Thecla rubi*, *T. quercus*, *Polyommatus phlæas*, *Lycæna icarus*, *Nisoniades tages*, *Hesperia thauwas*, *H. sylvanus*, all more or less common. *Vanessa cardui*, common in larval state but not common as imagines. *Pararge egeria*, scarce. *Thecla w-album*, rare. (29 species.) *Sphinx convolvuli*, not rare at *Nicotiana affinis*; *S. ligustri*, in larval state only, scarce. *Deilephila livornica*, one taken at flowers of rhododendrons on June 5th. *Chærocampa porcellus* and *C. elpenor*, fairly common at same flowers and pinks. *Smerinthus populi*, at light, and larvæ not scarce. *Macroglossa stellatarum* and *M. bombyliiformis*, occasionally at flowers in sunshine. *Zygæna trifolii* and *Z. filipendulæ*, common, some nice barred forms of the former being taken, and one of the latter approaching var. *chrysanthemi* was secured by Mr. Holland. *Hylophila prasinana*, not scarce when beating for larvæ. *Nola cuculatella*, common at light. *N. confusalis*, not rare at rest. *Nudaria senex*, scarce at light. *Euchelia jacobææ*, *Arctia caja*, *Spilosoma lubricipeda*, *S. menthastri*, common. *S. mendica*, scarce. *Hepialus humuli*, *H. lupulinus*, and *H. hectus*, flying at dusk. *Cossus ligniperda*, common in larval state. *Psilura monacha*, scarce. *Dasychira pudibunda*, fairly common; also *Orgyia antiqua*. *Pæcilocampa populi*, at light. *Bombyx rubi*, very common as larvæ and imagines. *Odonestis potatoria*, in ova. *Saturnia pavonia*, scarce. *Drepana falcula*, at light, and beaten from birch trees. *Cilia glaucata*, common at light, both broods. *Dicranura vinula*, in larval state. *Stauropus fagi*, two at rest. *Pterostoma palpina*, *Lophopteryx camelina*, *Notodonta dictæoides*, *N. ziezac*, *N. chaonia*, *N. trimacula*, and *Phalera bucephala*, all at light. *N. dromedarius*, only as larvæ and pupæ. *Pygæra pigra*, fairly common in larval state. *Thyatira derasa*, *T. batis*, *Asphalia diluta*, common at sugar. *Bryophila muralis* and *B. perla*, former scarce, latter common on old walls round Swansea. *Acronycta tridens*, larvæ; *A. psi*, at rest; *A. alni*, rare; (*A. ligustri*, empty pupa cases found under moss on ash trees); *A. rumicis*, common at rest and as larvæ, latter feeding on strawberry. *Leucania conigera*, scarce. *L. turca*, at sugar, as also *L. lithargyia*, *L. littoralis*, *L. comma*, *L. impura*, and *L. pallens*. *Tapinostola fulva*, at light (some very dark specimens). *Gortyna ochracea*, at light, and as pupæ in *Eupatorium cannabinum*. *Hydræcia nictitans* and *H. micacea*, at light, the former also at flowers and very abundant at both. *Xylophasia rurea* and var. *combusta*, *X. lithoxylea*, *X. monoglypha*, *X. hepatica*, *X. scolopacina*, at flowers and sugar. *Neuronina popularis*, *Charæas graminis*, *Luperina testacea*, *L. cespitis*, all more or less common at light. *Mamestra albicolon*, *M. brassicæ*, *M. persicariæ*, *Apamea basilinea*, *A. gemina* and var. *remissa*, *A. didyma*, *Miana strigilis*, *M. fasciuncula*, *M. bicoloria*, at sugar. *M. arcuosa*, at light. *Grammesia trigrammica*, at sugar. *Caradrina morpheus*, *C. alsines*, *C. taraxaci*, *C. quadripunctata*, *Rusina tenebrosa* (very dark), at light. *Agrotis vestigialis*, by searching sandhills, and sugar. *A. suffusa*, *A. saucia*, *A. segetum*, *A. exclamationis*, *A. corticea*, *A. ripæ*, *A. nigricans*, *A. tritici*, *A. præcox*, *Noctua glareosa*, *N. augur*, *N. plecta*, *N. c-nigrum*, *N. brunnea*, *N. festiva*, *N. rubi*, *N. umbrosa*, *N. baja*, *N. castanea*, *N. xanthographa*. *Triphæna ianthina*, *T. interjecta*, *T. comes*, *T. pronuba*, *Amphipyra pyramidea*, *A. tragopogonis*, *Mania typica*, *M. maura*, all more or less common at sugar. *Noctua diatrapezium*, at light. *Panolis piniperda*, rare at sallows. *Pachnobia rubricosa*, *Taniocampa gothica*, *T. incerta*, *T. stabilis*, *T. gracilis*, *T. munda*, *T. pulverulenta*, all common at sallow. *Orthosia suspecta*, sugar. *O. lota*, *O.*

*macilenta*, *Anchocelis rufina*, *A. pistacina*, *A. litura*, *Cerastis vaccinii*, *C. spadicea*, *Scopelosoma satellitia*, at sugar and ivy. *Anchocelis lunosa*, very common at light. *Xanthia fulvago* and *X. flavago*, abundant, especially the latter, both bred from catkins, but no variety *flavescens* of the former, though in 1889 I bred a fair percentage of that var. from catkins in Hampshire. Oddly enough, I did not take a single specimen of either species at sugar, light, or at rest. *X. circellaris*, common at sugar and ivy. *Cirrhaedia xerampelina*, full-fed larvæ found under moss on bark of ash trees at Gower. *Tethea subtusa* and *T. retusa*, rarely, at light and rest. *Calymnia trapezina*, *C. pyralina*, and *C. affinis* (only one), at light and sugar. *Dianthæcia capsicola* and *D. cucubali*, common as larvæ, especially the former. *Miselia oxyacanthæ*, *Agriopis aprilina*, *Euplexia lucipara*, *Phlogophora meticulosa*, *Aplecta prasina*, *A. nebulosa*, *Hadena protea*, *H. dentina*, *H. oleracea*, *H. pisi*, *H. thalassina*, more or less common at sugar, though *H. dentina* was abundant at flowers of rhododendron. *Xylocampa areola*, common, flying over salallows, though much too shy to be taken like the other salallow frequenters. I am breeding some from ova deposited last year, and they have begun to emerge abnormally early, nine having appeared up to present date, Feb. 3rd, the first emergence being on Jan. 10th, pupæ being kept in cold room without fire. *Calocampa vetusta* and *C. exoleta*, at ivy and sugar respectively. *Xylina ornithopus*, at sugar and at rest. *Cucullia verbasci*, common in larval state. *C. umbratica*, scarce, only two being taken at flowers. *Gonoptera libatrix*, not common at sugar or as larvæ. *Habrostola tripartita* and *H. triplasia*, occasionally taken flying over flowers of snowberry, and as larvæ on nettle. *Plusia chryson*, not rare as larvæ on *Eupatorium cannabinum*, and two at light. *P. chrysitis*, *P. iota*, *P. pulchrina*, and *P. gamma*, at flowers and rest, the last named being a regular nuisance. *Heliaca tenebrata*, rather scarce in fields where buttercups were common. *Hydrelia uncula*, common in boggy places, but very difficult to obtain in perfect condition, as they are so erratic in their flight, one impaling itself on a furze-bush in its mad career. *Phytometra viridaria*, *Euclidia mi*, *E. glyphica*, common in rough meadows and in park. *Toxocampa pastinum*, occasionally kicked up out of herbage in daytime. *Rivula sericealis*, scarce in same boggy meadows as *H. uncula*, *Zanclognatha grisealis*, *Z. tarsipenalis*, beaten from hedges and bushes at dusk. *Hypena proboscidalis*, abundant among nettles. *Hypenodes costastrigalis*, not uncommon at light and sugar, preferring the former. Among the Geometræ *Uropteryx sambucaria* was common, flying at dusk. *Epione apiciaria* and *E. advenaria*, rather rare. *Rumia luteolata* and *Metrocampa margaritaria*, both common. *Ellopiæ prosapiaria*, *Eurymene dolobraria*, and *Pericallia syringaria*, all scarce at light. *Selenia bilunaria*, *S. lunaria*, *S. tetralunaria*, *Odontopera bidentata*, *Crocallis elinguaris*, much commoner than last named. Also *Eugonia alniaria*, *E. erosaria*, *E. quercinaria*, *Himera pennaria*, and *Phigalia pilosaria*. *Amphidasys strataria* and *A. betularia*, occasionally at light and rest. *Boarmia repandata* and var. *conversaria*, and *B. gemmaria*, both flying at dusk and at rest. *Tephrosia consonaria*, common in beech woods, at rest. *T. crepuscularia* and *T. biundularia*, and black varieties of each at rest on various trees and at light. *T. punctulata*, abundant in birch woods. *Pseudoterpna pruinata*, some specimens quite blue on the cliffs at Langland Bay. *Geometra papilionaria*, *Iodis lactearia*, *Zonosoma porata*, at light. *Asthena luteata*, *A. candidata*, *A. sylvata*, *Eupisteria heparata*, netted during day and at dusk. *A. dimidiata*, *A. bisetata*, *A. dilutaria*, *A. immutata*, *A. remutaria*,



*A. aversata* and var. *spoliata*, *Cabera pusaria*, *C. exanthemaria*, taken by same means and bred. *Halia vauaria*, bred from larvæ found on red currant. *Strenia clathrata*, *Panagra petraria*, *Numeria pulveraria*, *Ematurga atomaria*, *Bupalus piniaria*, either kicked up or beaten from various trees and bushes. *Abraxas grossulariata*, common but local. *Lomaspilis marginata*, abundant near willows. *Hybernia rupicaprararia*, *H. leucophæaria*, *H. aurantiaria*, *H. marginaria*, *H. defoliaria*, *Anisopteryx æscularia*, *Cheimatobia brumata*, *Oporabia dilutaria*, all more or less common at light and rest. *Larentia didymata*, a perfect nuisance, flitting along hedgerows. *E. salicata*, only one taken. *L. viridaria*, rather scarce in beech woods. *Emmelesia alchemillata*, scarce at Penllergare. *E. albulata*, abundant where yellow-rattle occurs. *E. decolorata*, *E. unifasciata*, occasionally at light. *Eupithecia pulchellata*, bred from foxglove and at light. *E. oblongata*, at light. *E. subfulvata*, at light and bred from *Achulea millefolium*. *E. castigata*, *E. vulgata*, and *E. absynthiata*, taken at light. *E. abbreviata*, abundant at rest on various trees, and occasionally at willow. *E. pumilata*, at light. *E. rectangulata*, one only, at rest on apple tree. *Lobophora viretata*, scarce, at rest on hollies. *L. carpinata*, on various trees. *Thera variata*, at rest on fir trees and palings near. *Hypsipetes trifasciata*, scarce, beaten from alder. *H. sordidata* and var. *infusata*, beaten from hedges, some beautiful specimens of latter being taken. *Melanthia bicolorata*, not uncommon, beaten from alder. *M. ocellata*, abundant at rest and at light. *M. albicillata*, rare at light. *Melanippe hastata*, one taken; few seen in Clyne woods. *M. sociata*, common. Also *M. montanata*, *M. galiata*, occasionally to be met with on sandhills, among *Galium verum*. *M. fluctuata*, common everywhere. *Anticlea nigrofasciaria*, scarce. *Coremia designata*, *C. ferrugata*, *C. unidentata*, and *Camptogramma bilineata*, equally common at light, flying at dusk and at rest. *C. fluviala*, one male taken at light. *Eucosmia undulata*, one beaten from trees. *Cidaria truncata*, *C. immanata*, *C. suffumata*, *C. silacea*, *C. prunata*, *C. dotata*, and *Pelurga comitata*, at flowers, light and rest. *Eubolia limitata* and *E. plumbaria*, kicked up in rough meadows. *E. bipunctaria*, on the cliffs round Langland Bay. *Mesotype virgata*, common on sandhills. *Anaitis plagiata*, kicked up, and occasionally at light. When the word "light" is used, it means that the moths were taken in moth-traps, as there are no lamps near enough to work except on road to Swansea, which is very frequented at night and more than a mile from this house, which makes them hardly worth while working.—R. B. ROBERTSON; Sketty Park, Swansea.

## NOTES AND OBSERVATIONS.

Messrs. L. Reeve and Co. have in preparation a new work on the British Aculeate Hymenoptera, from the pen of Mr. Edward Saunders, F.L.S., uniform with the same author's work on the Hemiptera-Heteroptera just completed.

THE SUCCESS OF A MOTH-TRAP.—I have now used my moth-trap fairly constantly for two years, and on the whole have found it very successful; but I cannot help thinking that its position has a great deal to do with its success, for other entomologists who have had traps made from my pattern



and have used them in as good, if not better, localities, have found them almost a failure. My trap is about two miles distant from any gas-lamps. so that there are no other lights to prove counter-attractions through the night. It is placed at a bedroom window on the first floor, overlooking the garden and meadows. The window is in a sheltered corner, where the wing of the house runs out at right angles to the "trap-window," and the house being white, I fancy the walls help to attract the insects; in fact, they take the place of the white sheet hung behind the fen collector's lamp. I believe the distance from gas-lamps, the sheltered position, and the white background, are the real secrets of success with my trap. In 1891 the lamp was lighted 83 nights, and only three times was the trap empty in the morning. In 1892 I was not able to keep such a careful record of results, as I was a great deal away from home; but I know there were five nights of utter failure. On an average I take 30 moths every night in the trap, and sometimes as many as 135, 142, and 150 in one night. Dull, warm nights, in dry weather seem the most productive, and clear, quiet nights are often good. Bright moonlight and high wind seem the two conditions that render the trap really unproductive. It is curious how some nights Geometers are chiefly attracted, other nights Noctuæ; and I have noticed that when sugar proves very attractive, very few Noctuæ come to the trap. Several insects new to this locality have been taken only in the trap, and some interesting varieties have occurred. Among the better moths I have taken during the last two years are the following:—*Lithosia mesomella*, *L. griseola*, *Nemeophila russula*, *Trichiura cratægi*, *Xylophasia sublustris*, *Luperina cespitis*, *Noctua depuncta*, *N. ditrapezium*, *Hadena genistæ*, *Aventia flexula*, *Geometra papilionaria*, *G. vernaria*, *Phorodesma bajularia*, *Zonosoma porata*, *Acidalia emarginata*, *Lobophora sexalisata*, *Melanippe unangulata*, *Cidaria silaceata*, *Orobena extimalis*, and *Platyptilia bertrami*.—MARY KIMBER; Cope Hall, Newbury.

MIGRATION OF BUTTERFLIES.—Can anyone tell me the reason of the periodical flights of butterflies which take place here? They usually occur shortly before the S.W. monsoon (about April). Occasionally, owing to cyclones in the Bay of Bengal, we get a few fine days, but very cold during our wettest months, December and January, and then a small flight takes place. During the big flight, which lasts about a week, the butterflies pass in millions, and for one or two days you can almost imagine that it is snowing, so thickly do they come. The direction of the flight is from north to south. The species represented in the flight are mostly *Catopsilia catilla* and *C. crocale*, with a few *C. pyranthe*, and *Catophaga neombo* and *C. galene*. The female of *C. catilla* varies much on the under side; I have five different ones, and they all appear to be equally abundant. Another butterfly that often goes in big flights is *Isamia asela*, usually accompanied by *Parantica ceylonica*. This flight, usually takes place about February; but this year, owing probably to the cold, it has not yet taken place. The native tradition is, that they go to Adam's Peak. My tea-maker, who has been a sailor, tells me that he has often seen a flight of yellow butterflies out at sea, when out of sight of land, especially off the coasts of Ceylon and India. I myself have noticed, when out dredging, *Isamia asela* flying out to sea, and when going to the Maldivé Islands, last year, we saw two of the same species; we were then about 100 miles from the Maldives, and, as I saw none there, they must have come from Ceylon, and against the wind. For any information as to the reason of these flights I shall be

most grateful.—P. E. RADLEY; Marguerita, Maturatta, Ceylon, Feb. 12, 1893.

DESTRUCTIVE INSECTS IN AFRICA.—About a fortnight since, the locusts paid Johannesburg a visit; they came in millions, and settled in the town and on the holdt surrounding it for miles on every side. After a brief stay the majority re-started in a north-easterly direction, although countless numbers of dead ones are everywhere seen. Fires were lighted in public and private gardens, and everything done to destroy them, but the burnt-up appearance of everything tells its tale. Since their disappearance I have visited a favourite spot, where last year I found several orders of insects very plentiful, but there were none of any kind to be found. This was a marshy spot, and some of the long grass and flowers escaped the general devastation. I quite expected to get something, but it would appear that insects of all orders, save house-flies, have gone; it is universally regretted that these industrious little fellows did not also go. I passed through Natal last month, and stayed one night at Newcastle, where they have had a plague of caterpillars. Many of the trees (weeping willow) were quite defoliated. The caterpillar was a large handsome *Bombyx*, which I have not yet been able to identify, but which seems to be widely distributed in S. Africa. Zulus were employed in beating the trees with long bamboo canes, when the caterpillars were collected in buckets and buried. *Chærocampa celerio* was very plentiful in the gardens in the evening; in fact, it seemed the commonest moth there, although many of the smaller species swarmed around the lamp at the hotel.—J. P. CREGOE; Johannesburg, Jan. 1, 1893.

FIRST APPEARANCE OF SEXES OF LEPIDOPTERA.—Writing under this head (Entom. xxii. 213), Mr. A. E. Hall stated that, in his experience of breeding Lepidoptera, the females were nearly always the first to appear by a day or two. At the time I was under the impression that this did not agree with my own experience; but I had no notes, and determined to wait and make some investigations before expressing an opinion. This I have done, and have not noted a single species in which the females are regularly the first to appear; generally both seem to appear together, but when there is a difference it is in favour of the male, thus agreeing with what Mr. Hall states to be the general opinion. I have especially noticed this in the winter-emerging Geometræ, as the following statistics will show. *Hybernia aurantiaria*.—1890: males, Nov. 11 to 21; females, Nov. 12 to Dec. 4 (only three before Nov. 19). 1891: males, Nov. 7 to 21; females, Nov. 17 to Dec. 2 (only one before Nov. 24). 1892: males, Oct. 31 to Nov. 17; females, Nov. 12 to 27. *H. rupicaprararia*.—1891: males, Jan. 31 to Feb. 14; females, Feb. 16 to March 6. 1892: males, Jan. 23 to Feb. 22; females, Jan. 26 to Feb. 28 (only five females against fourteen males up to Feb. 1). 1893: males, Jan. 23 to Feb. 13; females, Jan. 28 to Feb. 13 (twenty-five males and seven females to Feb. 2, twenty-six females and four males from Feb. 3 to 13). *Cheimatobia boreata*.—1890: males, Nov. 7 to 11; females, Nov. 15 to 21 (only a few bred). 1891: males, Oct. 26 to Nov. 10; females, Nov. 11 to 16 (only a few bred). 1892: males, Nov. 5 to 14; females, Nov. 5 to 18. With regard to Mr. Hall's conjecture as to the "reason for the females emerging first," viz., "that they require a certain period to elapse before coition," this is not borne out by the breeder's experiences of the immediate copulations which take place, nor by those of entomologists who work at "assembling," and who generally find the first



night the best. If any argument can be drawn from this, it would surely be in favour of the first emergence of the males, that they may be ready to fly and to seek out the newly-emerged females.—LOUIS B. PROUT; 12, Greenwood Road, Dalston, N.E., Feb. 18, 1893.

HYBERNIA MARGINARIA TRAVELLING BY TRAIN.—On getting into a train at Earl's Court Station, on the 6th inst., I saw what I took to be a patch of mud on the window of the carriage. I examined this more closely before quitting the train at Turnham Green, and found the object to be a fine male *Hybernia marginaria*. The probability is that the moth had entered the carriage at Hounslow on the previous night, and had been travelling between Acton Green and Earl's Court all day. I can easily understand that, in this way, insects may be carried long distances into districts in which they are not indigenous.—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, March 10, 1893.

SUGARING.—I have always found that sugar failed to attract Lepidoptera on moonlight nights. Some collectors say that moths have freely visited their sugar on such nights, but perhaps the bait on these occasions was spread in woods where the moon's rays did not penetrate.—JAS. GARROW; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, March 13, 1893.

CLOSTERA ANACHORETA. — In reply to Mr. Sydney Webb's question, I can assure him that I feel as confident as one can be when relying on memory after a lapse of thirty years, that I never tried to establish colonies of *C. anachoretæ* either at Deal or elsewhere.—H. G. KNAGGS; March, 1893.

THE CYANIDE REACTION WITH YELLOW LEPIDOPTERA.—I was much interested in Mr. Coste's paper in the January number of the 'Entomologist,' particularly as he had experimented on some species which are very common here, viz., *Catopsilia crocale*, *C. catilla*, and several *Terias*. Owing, I presume, to the climate, my killing bottles (cyanide of potassium) are usually in a sloppy condition. I invariably kill *Terias* with the bottle, and my collector does the same with everything, no matter what the size, but I have never found that any of the yellow Pieridæ ever turn red. Since reading Mr. Coste's article, I have experimented with the plain cyanide of potassium, unmixed with plaster of Paris, on all the common Pieridæ found here, but in no one case have they changed colour. Is this owing to the climate? which is damp; temperature averages about 65° Fahr., elevation 5500 ft. I find that old specimens of *Catopsilia* (two to three years) go green in the nervures of the wings. The District Medical Officer, who often collects for me, usually kills with hydrocyanic acid, but, with the exception of some of the green Noctuæ and Geometræ, I have never found any change of colour. Can any of your readers tell me why most of the green Noctuæ and Geometræ lose their colour, while Bombyces and Pyralides keep theirs well? and is there any way to prevent them changing colour?—P. E. RADLEY; Marguerita, Maturatta, Ceylon, February 13, 1893.

DANAIS (ANOSIA) PLEXIPPUS IN NEW ZEALAND. — I have again the pleasure of recording the appearance of this beautiful butterfly in New Zealand. In the early part of this month I was staying at Mr. E. F. Wright's fine property, the Winwood Orchard, Mt. Somers, and on the 10th,



which was a very hot, sultry day, we saw a specimen of *D. plexippus*, flying along the sunny side of a belt of *Pinus insignis*. It seemed to be freshly emerged, but it flew too high and strong for us to be able to pursue or capture it. It is, therefore, very gratifying to be able to record the occurrence of two specimens in two years, and in localities thirty miles apart. The food-plant of the larva is now established in several districts in New Zealand; and we hope that this fine insect may also become an established species.—W. W. SMITH; Ashburton, N. Z., January 17th, 1893.

VARIETIES OF *DANAIS CHRYSIPPUS* AND *PLEXIPPUS*.—On looking through some specimens of *Danais chrysippus* and *plexippus* which I have just received from Goindpore, India, I find I have a specimen of each species exhibiting a peculiar form of colouring which I have not hitherto seen. The sex is in both cases the same (male); the *chrysippus* is rather larger, and *plexippus* slightly below the average; the former is on the upper surface slightly paler, and on the under surface decidedly paler, and of a clearer tone of colour than is usually the case; in fact, between the cell and the hind margin of secondaries it is of a clear straw-colour; the *plexippus* is darker than usual, the dark colour along the rays being more suffused and spread over more surface, the second row of marginal spots on upper surface of secondaries is (as is often seen) obsolete for a portion of the distance from the costal edge. But the great peculiarity is that the whole of the dark portions of the primaries in both species, and in *plexippus* the costal margin and (in a less degree) the outer margin of secondaries also, are mottled, as though the colour had run into small isolated spots and left the space between these spots of a paler colour. This is noticeable in *chrysippus* at the black apical patch, which appears a rusty black; it is not so pronounced in the *plexippus*. The chestnut area in the cell of primaries of *chrysippus* is also mottled, the spots being larger and fainter; the light tawny colour between the median ray and the inner margin is not mottled, nor is the dark tawny or chestnut area on primaries of *plexippus*, except the costal half of the cell, where, as in *chrysippus*, it is fainter than the other parts. In *chrysippus* no portion of secondaries is mottled, and, as before mentioned, only the costal edge and outer margin of secondaries in the *plexippus*; this mottling is visible on upper and under surfaces. I have also, out of the same lot, a male of *plexippus* where the white lines along the rays of secondaries—sometimes seen in certain specimens on the under surface—are much wider than usual, occupying one-third the space on either side of the ray, and calling to mind the West African variety of *D. chrysippus* (var. *alcippus*).—JOHN WATSON.

VARIATION IN PUPE OF *ANTHOCHARIS EUPHENOIDES*, *Stgr.*—Referring to my journal, which I have kept regularly for some years past, I note that fifty-two larvæ of *A. euphenoides* were collected by me last summer in the northern parts of the Alpes-Maritimes. It is a curious fact that, while the caterpillars of this species are common in the inland parts of the range, imagines are far oftener seen at the coast. My larvæ were all found on a tall, coarse crucifer, of the genus *Sisymbrium*, which is very abundant, generally in stubble fields or waste ground in elevated districts. This plant often grows to an extraordinary height under favourable conditions, sometimes standing over six feet high. I never met with *A. euphenoides* on the usually mentioned food-plants (i. e., *Biscutella laevigata* and *B. burseri*), though, I believe, it is stated to live on other kinds of Cruciferae besides. The pupæ, which are thin and arched, vary from all shades of

light drab or greyish buff to bright green, all hues intermediate being met with. But curiously enough the larvæ, as far as I have observed, are always uniform, both in respect of markings and coloration. The year before last I commenced operations rather later than usual, and only found sixteen larvæ. These, however, were all met with within the space of one week (July 5th onwards). As they were all full-fed, I had not long to wait for the pupæ. Of the chrysalids resulting, only one out of eight obtained was of the green variety. The caterpillars of *A. euphenoides* feed quite exposed, sometimes as many as five on one plant, on the flowers and seed-vessels; the leaves they never appear to touch. This season, though I collected a far larger number of larvæ than usual, not one pupa was of this green variety, though some of the chrysalids were of a decidedly *greenish* hue. Possibly this may result from one of two things; either the deviation from the common form is due to an unusually mild summer-like winter, or, perhaps, the pupæ vary to suit the exigencies of circumstances in certain localities. I think, on the whole, however, the latter supposition is the more probable. Unlike the green chrysalids of *Papilio machaon*, which some entomologists assert occur only in the summer brood, both varieties of the pupæ of *A. euphenoides* pass the winter. Nor is the difference of colour apparently confined to any one sex. For instance, two years ago, I obtained several males and females from grey pupæ, and a male example besides from a green pupa. I have never noticed any departure from the typical form in the chrysalids of *A. belia*, Cr., which are met with at the same time as *A. euphenoides*, in the proportion of about ten to fifty (or one-fifth) of the latter, in the locality of which I write. It is interesting to note, from previous seasons, that imagines from these green pupæ (as far as I have noticed) differ in no way from those obtained from normal chrysalids. Possibly these facts may have some bearing on the old *P. machaon* pupa discussion (see Entom. xxv. 44, 93, 120). Perhaps other collectors would give the results of their observations on the pupæ of other (variable) species?—FRANK BROMILOW; St. Maurice, Nice, S. France, Nov. 5, 1892.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 22nd, 1893.*—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Kenneth J. Morton, of Glenview Cottage, Carlisle, N.B.; Herr A. F. Nonfried, of Rakovnik, Bohemia; and Mr. Charles C. Taylor, of Rae Town, Kingston, Jamaica, were elected Fellows of the Society. Mr. F. J. Hanbury exhibited, on behalf of Mr. Percy H. Russ, of Sligo, several long and very variable series of *Agrotis tritici*, *A. valligera* and *A. cursoria*, together with Irish forms of many other species, some of which were believed to be new to Ireland. Mr. W. H. B. Fletcher and Mr. J. W. Tutt made some remarks on the species. Mr. R. W. Lloyd exhibited specimens of a species of *Acarus* found in New Zealand wheat. He stated that Mr. A. D. Michael had examined the specimens, and pronounced them to belong to *Tyroglyphus farinae*, a species which had been known for over a hundred years as a destroyer of corn, and was only too abundant all over Europe, and probably over the temperate regions of the world. Dr. T. A. Chapman exhibited, by means of the oxy-hydrogen lantern, photographs of the larva



of *Nemeobius lucina* in its first stage, showing the conjoined dorsal tubercles, each carrying two hairs, which are remarkable in being divided into two branches. For comparison he also showed, by means of the lantern, drawings of the young larva of *Papilio ajax*, after Scudder, and of a portion of a segment of *Smerinthus populi*, as the only instances known to him of similar dichotomous hairs in lepidopterous larvæ. Mr. E. B. Poulton pointed out that he had described the forked hairs of *Smerinthus* in the Entomological Society's 'Transactions' for 1885, and that such hairs were even better developed in the genus *Hemaris* originally described, as he believed, by Curtis. Mr. Poulton also said that he had noticed similar forked hairs covering the newly-hatched larvæ of *Geometra papilionaria*. Mr. Poulton exhibited, and made remarks on, a number of cocoons of *Halias prasinana*, in order to show the changes of colour produced in them by their surroundings; he also exhibited the coloured backgrounds employed by him in his recent experiments on the colours of larvæ and pupæ, and illustrated his remarks by numerous drawings on the blackboard. Dr. Chapman read a paper—which was illustrated by the oxy-hydrogen lantern—entitled "On some neglected Points in the Structure of the Pupa of Heterocerous Lepidoptera and their Probable Value in Classification." A discussion ensued, in which Mr. Elwes, Mr. Poulton, Mr. Champion, and Mr. Merrifield took part. Dr. F. A. Dixey communicated a paper entitled "On the Phylogenetic Significance of the Variations produced by Differences of Temperature on *Vanessa atalanta*." The President, Mr. Merrifield, Mr. Poulton, Dr. Chapman, and Mr. Tutt, took part in the discussion which ensued.—H. Goss, *Hon. Sec.*

*March 8th.*—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Frank. E. Beddard, M.A., F.R.S., of the Zoological Gardens, Regent's Park, N.W.; Monsieur Edouard Brabant, of Château de Morenchies, Cambrai, France; Mr. Frank Bromilow, of Avalon, St. Maurice, Nice, France; Mr. Henry Powys Greenwood, F.L.S., of Harnham Cliff, near Salisbury; Mr. Frederick Michael Halford, of 6, Pembroke Place, W.; Lieutenant-Colonel Leonard Howard L. Irby, F.L.S., of 41, Cornwall Terrace, Regent's Park, N.W.; Mr. Bertram S. Ogle, of Steeple Acton, Oxfordshire; Herr Wilhelm Pauleke, of 33, Langstrasse, Baden-Baden, Germany; Mr. Louis B. Prout, of 12, Greenwood Road, Dalston, N.E.; and Captain Savile G. Reid, late R.E., of Foyle House, Alton, Hants, were elected Fellows of the Society; and Herr Pastor Wallengren, of Farhult bei Höganäs, Sweden, and Herr Hofrath Dr. Carl Brunner von Wattenwyl, of Vienna, were elected Honorary Fellows of the Society to fill the vacancies in the list of Honorary Fellows caused by the deaths of Prof. Hermann Carl Conrad Burmeister and Dr. Carl August Dohrn. Dr. D. Sharp exhibited a species of *Enoplotrupes* from Siam, which was believed to be new, and which he thought Mr. Lewis intended to describe under the name of *E. principalis*. This insect had great power of making a noise, and the female seemed in this respect to surpass the male. Mr. W. F. H. Blandford said he wished to supplement the remarks which he made at the meeting of the Society on the 8th of February last on the larva of *Rhynchophorus*. He stated that he had since found that only the first seven pairs of abdominal stigmata were rudimentary. The posterior pair were well developed and displaced on to the dorsum of their segment, which was thickly chitinated, and bore a deep depression, on the margins of which the spiracles were situated. He suggested that the absence of lateral spiracles



was perhaps correlated with the wetness of the larval burrows, and that it was a displacement of the posterior stigmata, usually supposed to be restricted to aquatic coleopterous larvæ. He added that dissection showed that the posterior pair were the principal agents of respiration. Dr. Sharp and Mr. Champion made some remarks on the subject. Mr. W. H. B. Fletcher exhibited a long series of bred *Zygana lonicera* and *Z. trifolii*, hybrids of the first generation with the following parentage:—*Z. lonicera*, male—*Z. trifolii*, female; *Z. trifolii*, male—*Z. lonicera*, female; also hybrids of the second generation between *Z. trifolii*—hybrid, and *Z. lonicera*—hybrid. The President enquired whether the hybrids were robust and healthy or the reverse. Mr. Fletcher stated that many of the hybrids were larger than the parent species, and that some hybrids between *Z. lonicera* and *Z. filipendula* were the largest he had ever seen. He added that *Zygana meliloti* would not hybridise with *Z. lonicera*, *Z. trifolii*, or *Z. filipendula*. Mr. Barrett and Mr. Tutt continued the discussion. Mr. F. W. Frohawk exhibited a bred series of *Vanessa atalanta*, showing the amount of variation in the red band on the fore wings of the female. In seven specimens there was a white spot on this band, and in ten specimens it was absent. Mr. Elwes exhibited a large number of specimens of *Chrysophanus phlæas* from various places in Europe, Asia, and North America, with the object of showing that the species is scarcely affected by variations of temperature, which was contrary to the opinion expressed by Mr. Merrifield in his recent paper "On the effects of temperature in the pupal stage on colouring." Mr. McLachlan, Mr. A. J. Chitty, Mr. Bethune-Baker, Mr. Tutt, Mr. Barrett, and Mr. Frohawk took part in the discussion which ensued. Dr. Sharp read a paper entitled "On Stridulating Ants." He said that examination revealed the existence in ants of the most perfect stridulating or sound-producing organs yet discovered in insects, which are situated on the 2nd and 3rd segments of the abdomen of certain species. He was of opinion that the structures which Sir John Lubbock thought might be stridulating organs in *Lasius flavus* were not really such, but merely a portion of the general sculpture of the surface. Dr. Sharp said that the sounds produced were of the greatest delicacy, and Mr. Goss had been in communication with Mr. W. H. Preece, F.R.S., with the view of ascertaining whether the microphone would assist the human ear in the detection of sounds produced by ants. Mr. Preece had stated that the microphone did not magnify, but merely reproduced sounds; and that the only sounds made by ants which he had been able to detect by means of the instrument were due to the mechanical disturbance produced by the motion of the insects over the microphone. A long discussion ensued, in which the President, Canon Fowler, and Messrs. Champion, McLachlan, Goss, Hampson, Barrett, Jacoby, and Burns took part. Mr. C. J. Gahan read a paper entitled "Notes on the Longicornia of Australia and Tasmania, Part I.; including a list of the species collected by Mr. J. J. Walker, R.N., and descriptions of new forms."—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 23rd, 1893.—J. Jelmer Weir, Esq., F.L.S., President, in the chair. Mr. S. Edwards exhibited a box of Exotic Rhopalocera, illustrative of mimicry, from widely different localities. Mr. South, series of *Cerostoma radiatella*, Don., and *C. costella*, Fab., and remarked on the number of varieties of *radiatella*, and the great difficulty of satisfactorily separating

forms of the latter from forms of *C. costella*. Mr. Auld, a box of Coleoptera collected near the Cape of Good Hope. Mr. Barrett drew attention to a method of transferring the scales of the wings of Lepidoptera to paper, as exemplified by a sample from Herr Aug. Hoffmann, and Mr. Tugwell noticed that the scales were necessarily reversed, and the body, eyes, antennæ, &c., painted in. Mr. McArthur showed a method of staging and securing an insect by means of a slip of thin card doubled over, when for any reason the pin through the thorax had been rendered useless. Mr. R. Adkin exhibited a short series of *Spilosoma mendica*, Clerck, bred from larvæ found in Aberdeenshire, the males being of a brownish colour. Mr. Tugwell referred to the fact that specimens of the male *S. mendica* from Barnsley were light, whereas those from Huddersfield were dark forms, as exhibited recently by Mr. G. T. Porritt. Mr. Billups, some curious forms of Hemiptera-Homoptera, Hymenoptera, Neuroptera, Orthoptera, &c., from a mission-station on the Demerara River, British Guiana, and called attention to a fungoid growth attached to a specimen shown belonging to the Homoptera. Mr. Billups said it closely resembled, if it was not the actual species known as *Terrubia robertsii*, which attacks certain larvæ in New Zealand. Mr. J. Weir exhibited specimens of Euplœine butterflies from three distinct groups, viz., *Crastia core*, *Narmada coreoides*, and *Pademna kollari*, and read an interesting paper on "Isochromatous Lepidoptera." Mr. R. Adkin also exhibited a series of *Diurnea fagella*, Fb., from Lewisham, and mentioned several species, notably *Eupithecia rectangularata*, L., and *Miana strigilis*, Clerck, which had assumed a marked tendency towards melanism in the London district of late years; and resuming the discussion on Mr. Mansbridge's paper, adjourned from the previous meeting, agreed with the view therein expressed, that the vicinity of a large city, rather than the dampness of the atmosphere, appeared to account for the change. The discussion was continued by Messrs. Barrett, McArthur, Tutt, Robson (of Hartlepool), and others. Mr. Robson exhibited a short series of *S. mendica*, Clerck, of which one specimen, a female, bred at Hartlepool, was of a distinct cream-colour. He stated that this species was common in Northumberland and Durham along the coast, and that the male insect occasionally varied to a colour intermediate between the English and Irish forms. Mr. Robson also exhibited dark specimens of *S. populi*, L., from Aberdeen, and light forms (female) bred at Hartlepool. A discussion followed, Mr. R. Adkin stating that *S. mendica* was not a common species in Scotland, and he was not aware that it had previously been found so far north as Aberdeenshire. Mr. Tutt and Mr. J. A. Clark each referred to varieties of the species.

March 9th.—J. Jenner Weir, Esq., F.L.S., President, in the chair. The President exhibited specimens of *Diurnea fagella*, Fb., taken fifty years ago, near London, and Mr. R. Adkin remarked that they were as light as any taken now in the metropolitan district. Mr. Jenner Weir also noted the capture of *Vanessa io*, L., by his brother, on 19th February, near Sevenoaks, and that he had seen *Gonepteryx rhamni*, L., on the wing on 9th March. Mr. Fenn reported *G. rhamni* as having been common near Leatherhead at the end of February. A discussion arose as to the occurrence of *Polyommatus dispar*, Haw., at Camberwell, fifty years ago, and Mr. Fenn and Mr. Tugwell both recorded Kentish specimens previous to 1848. Mr. Tutt confirmed the capture of *Melanippe galiata*, Hb., near Huddersfield, as recorded by Mr. Mansbridge in his paper read before the Society



on February 9th. Mr. R. Adkin exhibited, for Mr. C. H. Watson, a specimen of *Pieris brassicæ*, L., which approaches very nearly *Pieris cheiranthi*, Hb., from the Canary Islands. The specimen, a female, was bred from larvæ found in a garden at Streatham; also two female specimens of *Apatura iris*, L., bred from larvæ taken in the New Forest in the autumn of 1891. Mr. G. B. Routledge exhibited a small collection of butterflies from Algiers, Hvères and Switzerland, including *Pararge ægeria*, Esp. (typical form), *Limenitis camilla*, Schiff., and *Polyommatus virgaureæ*, L. (females). Mr. R. Adkin exhibited a series of *Vanessa urticæ*, L., bred during 1892 in Sutherlandshire, N. B., which were generally dark in colour and with well-defined markings; also a specimen bred from the Essex coast, unusually light in colour. Mr. Sauzé, a small collection of Ichneumonidæ, captured in the perfect state. Mr. Jenner Weir exhibited specimens of a group of the Nymphalinae from the African region, mimicking others from the subfamilies Danaïnae and Acræinae. An interesting discussion ensued, and Mr. Weir referred to the fact that non-scented species of butterflies had been found eaten by birds, but scented species had not been so found; and Mr. South said that he understood that Danaïne butterflies generally escaped the attacks of mites in collections. The question as to the excursions of the Society during the ensuing summer was put to the meeting, and it was decided to discuss the matter at the meeting of April 13th, before coming to a final decision. It is hoped that a large attendance may result on April 13th, and more especially of the younger members, for whose benefit the excursions have in past seasons been arranged.

The Society's Annual Dinner was held at the Bridge House Hotel on Thursday, March 2nd. Among other interesting matters touched upon in the speeches that followed, it was mentioned that the Society had this year attained its majority, it having been established just twenty-one years ago. A pleasing event of the evening was the presentation to Mr. H. W. Barker, the retiring Hon. Secretary, of a cheque for £19, that had been subscribed by some sixty members, as a mark of their appreciation of the valuable services he had rendered to the Society during the seven years he had filled that office.—F. W. HAWES & H. WILLIAMS, *Hon. Secs.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY. — The Annual Meeting of this Society was held on Wednesday evening, January 9th, in the Council Chamber of the Museum, York, Mr. T. C. Dennis, F.E.S., President, in the chair. The following gentlemen were elected as officers for the ensuing year:—President, Mr. G. C. Dennis; Vice-Presidents, Messrs. W. R. Robinson, R. Dutton, S. Walker, H. J. Wilkinson; Honorary Secretary, Mr. W. Hewett.

February 8th.—Mr. G. Jackson exhibited several rare or local species, including *Deilephila galii*, Cred.; *Sesia musciformis*, Isle of Man; *S. ichneumoniformis*, Isle of Wight; *Zygena pilosella* (minos), Ireland; *Lithosia caniola*, *L. pygmeola*, *Emydia cribrum*, Ringwood; *Lælia cænosa*, from the collection of the late Mr. Owen. Mr. R. Dutton, *Boarmia robotaria*, *Hyria auroraria*, *Agrotis ravidæ*, *Sesia sphegiformis*, and *Stauropus fagi*, &c. Mr. W. Hewett, *Zygena minos*, Galway; *Spilosoma mendica*, Ireland; *Lophopteryx carmelita*, Marlow; *Emydia cribrum*, New Forest, &c.; also five very fine varieties of *Spilosoma lubricipeda*, from Barnsley, Driffield, and York, one from Driffield having the hind wings of the *radiata* colour, i. e., smoky black, the basal area wing-rays and fringe being cream-coloured, the head and thorax cream-coloured, the body yellow with



six black spots down the middle and on each side: antennæ simple; fore wings typical; an exceedingly fine variety of *Arctia caia*, from Hull, with the fore wings of an almost uniform brown colour, the hind wings (with the exception of the base) and fringe being black.—W. HEWETT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March 13th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. W. E. Sharp read a paper entitled "Notes on some Irish and other Coleoptera." After describing the division of England and Ireland from the Continent, he proved by the insect fauna that it was probable Ireland was the first to be separated, and enumerated many species taken by himself, including *Philonthus lucens*, new to the Irish fauna. He then read a list of additions to the local fauna. Mr. Willoughby Gardner, F.R.G.S., read a paper entitled "Notes on some of the rarer Aculeate Hymenoptera of our District." After presenting a copy of his 'Hymenoptera Aculeata of Lancashire and Cheshire' to the Society's library, he described several species new to the district, which he asked lepidopterists and others to keep a look-out for during their entomological rambles. Both papers were well illustrated by specimens. The President exhibited specimens of *Bombyx quercus*, including some fine varieties. Mr. Green, a collection of local Hymenoptera. Mr. Watson, *Papilio machaon* from England, Northern India, Japan, &c., and its huge variety *hippocrates*, from North-east China. Mr. Jones, on behalf of Mr. Bowler, a specimen of *Sphinx convolvuli* captured at Broadgreen.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*February 20th, 1893.*—Mr. S. T. Bethune-Baker in the chair. The following were exhibited:—Mr. R. C. Bradley, a long series of the genus *Conops* taken at Wrye Forest last year, including the following four species, —*C. flavipes*, *C. quadrifasciatus*, *C. ceriaformis*, and *C. strigatus* (two only). Mr. Barker, a box containing a number of rare and local insects, mainly continental examples of British species, including *Plusia moneta*, *Arctia lubricipeda* var. *zatima*, &c.; also pale male of *Arctica mendica*, from Ireland, &c. Mr. G. W. Wynn, a number of Noctuæ bred from hibernating larvæ found last spring at Marston Green and Wyre Forest, but which contained nothing better than *Triphæna fimbria*. Mr. W. Harrison, living larvæ of *Sesia tipuliformis*. Mr. P. W. Abbott read two short papers, illustrated by specimens; one upon his work at Wyre during 1882,—he had been working new ground and turned up a lot of new things, including *Cymatophora fluctuosa*, *C. duplaris*, *Asthena blomeri*, &c.; the other paper described a journey to Freshwater last August, for *Colias edusa*. — COLBRAN J. WAINWRIGHT, *Hon. Sec.*

NOTTINGHAM AMATEUR ENTOMOLOGICAL SOCIETY. — This Society continues steadily to increase. Among the latest who have joined are the Rev. W. Becker, of Wellow Hall, Newark-on-Trent (who has kindly consented to take the chair), and Mr. Douglas H. Pearson, of Chilwell, Notts. Weekly meetings continue to be held in the Society's rooms (Morley House). On 27th February Mr. Pearson read a most interesting paper entitled "Collecting in the Fens," illustrated by insects taken there by him last summer. The following week, J. G. Clarke read a very interesting paper on ants. Various other papers are promised for future dates. Cards of membership are now printed, and all interested in Entomology are invited to join.—W. FERRIS.

## OBITUARY.

F. O. MORRIS.—One of the best known of the popular writers on Natural History of the time, the Rev. Francis Orper Morris, the Vicar of Newburnholme, Yorkshire, died at that place on Feb. 10th last, in his eighty-third year. He was born at Cove, near Cork, in Ireland, on March 25th, 1810, but belonged to a well-known Yorkshire family, many of whose members served with distinction in the great wars with France and America, both by land and sea. F. O. Morris was educated at Bromsgrove School, and afterwards proceeded to Worcester College, Oxford, where he graduated with honours in 1833, taking a second class in Classics. When at Oxford, he was in the habit of reading three or four authors alternately, by which means he was able to get through a much greater amount of work with far less fatigue than if he had confined himself to one thing at a time; the most mischievous course that any active-minded man of ordinary capacities can follow. The same habit clung to him through life; and at one time, in addition to his parochial duties, which he never neglected, he had to find copy every month regularly for five separate works—the ‘British Birds,’ ‘British Butterflies,’ ‘Aphorismata Entomologica,’ ‘Bible Natural History,’ and the ‘History of the Nests and Eggs of British Birds.’ He used to quote with approval Southey’s aphorism, “I have not time to do only one thing at once.” Mr. Morris selected Pliny’s ‘Natural History’ as the subject of his voluntary thesis at his final examination in Oxford; and in 1837 he published some notes on British insects (chiefly Lepidoptera) in a periodical called the ‘Naturalist.’ In 1834 he was admitted to Holy Orders; and in 1854 settled down at Newburnholme Rectory for the rest of his life. His works had a large circulation, but as they were always of a popular character, and were necessarily to a large extent compilations, they were frequently underrated by writers of more pretensions. His opposition to Darwinism was perhaps unwise, but intelligible enough in a man of his age and surroundings. His writings include books on British ornithology, entomology, and general Natural History, besides sermons, polemics against Darwinism and vivisection, and a work on the ‘County Seats of the Noblemen and Gentlemen of Great Britain and Ireland.’ His entomological writings include his ‘British Butterflies,’ first published in 1852, and perhaps his most successful work, as the seventh edition was passing through the press at the time of his death; his ‘British Moths’ likewise, with coloured plates of all the species; his ‘Catalogue of British Insects’ (the only general catalogue since those of Curtis and Stephens), and his ‘Aphorismata Entomologica.’ His ‘British Butterflies’ formed the basis of a still more popular work—Adam’s ‘Beautiful Butterflies.’ Although it would be absurd to call Mr. Morris the “Gilbert White of the North,” as some of his local admirers have done, yet he will long be remembered as one of the most prominent popular writers of the middle of this century, after the Rev. J. G. Wood. He married a Miss Saunders, of Bromsgrove, by whom he had three sons and five daughters. (Some of the particulars in the present notice are compiled from a long obituary in the ‘Yorkshire Post’ of Feb. 13th, 1893).

# THE ENTOMOLOGIST.

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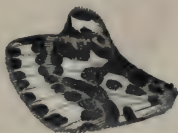
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## A MONSTROUS *ABRAXAS GROSSULARIATA*.



*ABRAXAS GROSSULARIATA*.

THE above figure represents the left fore wing of a specimen of *Abraxas grossulariata*, bred by the Rev. J. Seymour St. John, in June, 1892, from a larva found in his garden at Stamford Hill.

All the other wings of the specimen are quite normal, but the one figured has an extraordinary lobe on the costa. This lobe is really a small, reversed, reproduction of the wing upon which it is placed, but the neurulation appears to be incomplete; the fringes, however, are well formed.

This most curious and exceedingly interesting monstrosity deserves a more critical examination than I am permitted to make. It is not possible to ascertain the true character of the neurulation with certainty, unless the wing be denuded.

RICHARD SOUTH.

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## FURTHER REMARKS ON THE EARLIER STAGES OF *COLIAS HYALE*.

BY F. W. FROHAWK, F.E.S.

(Continued from p. 7.)

ON January 10th, 1893, one larva slightly shifted its position to the outside of the leaflet forming its hybernaculum during the thaw which set in after a fortnight of very severe weather. As the larvæ were kept indoors and carefully protected as much



as possible, they did not become subjected to more than 3° or 4° of frost, as undoubtedly any very severe degree of cold would have proved fatal.

On the 19th January, just three months after entering into hibernation, this larva quitted its hybernaculum altogether, crawled to another stem and along it to the withered leaves, and thereon remained motionless until the 23rd, which proved a warm day, the shade temperature rising to 50°, the larva being subjected to a slightly higher temperature, averaging during the day from 50° to 54°, moved on to a living stem of clover bearing three young leaflets, and after a fast of ninety-seven days partook of its first meal, which consisted of a considerable portion of one-half of a leaflet. It measures to-day (24th Jan.) the same as when last measured, viz.,  $\frac{3}{16}$  of an inch. Another larva has also shifted its position to-day, but has not left the cluster of withered leaves forming its hybernaculum. On 28th Jan. it left its retreat and crawled to a young leaf-stem with the leaves still unfolded and fed upon them the following day (29th), having fasted for one hundred and three days. Another larva also crawled on to a young half-expanded leaflet and likewise fed the same day (29th); the shade temperature rising to 51° midday. So far three larvæ have now fed since hibernation.

The above notes are from my note-book.

From some unaccountable cause these three larvæ never fed again. One died on the third day after feeding and expired in a feeding attitude. Another gradually grew weak and appeared to lose all power of using its feet, lying helpless across the leaf, and died in about a fortnight after feeding. The remaining one appeared strong and healthy for a fortnight after feeding and then lost power of holding on to the leaf, and died early on the 17th February, having lived for four months (121 days) since it entered into hibernation.

The five other larvæ mentioned (Entom. 6) died during hibernation.

From the above notes I think it is quite evident that *C. hyale* passes the winter as a larva, as no larva could exist for so long a period as *four months* in a hibernating condition unless it were natural for it to do so; and, further, the hibernation of *C. hyale* is complete, as it does not, as many species do, which pass the winter in the larval state, feed at frequent intervals during the hibernating period.

Balham, S.W., March, 1893.

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## PREVENTION AND CURE OF GREASE.

BY REV. JOSEPH GREENE, M.A., F.E.S.

Two communications on this subject (Entom. 33 and 109) are of much interest to me. Let me thank Messrs. Christy and Arkle for the kind manner in which they have referred to my method for the above. The few following remarks on the subject may perhaps be of some use. Both gentlemen advocate the use of French chalk or plaster of Paris. Mr. Arkle in particular employs a very elaborate apparatus. Let me assure them that the use of chalk is not only unnecessary, but is more or less injurious, as I hope to show. As Mr. Christy's recommendations apply only to the bodies, and not the whole insect, I will consider them first. The main points are—1st. "The bodies, whether excavated or not, must be soaked in benzine collas; the most convenient bottle that I have tried is one holding 4 ozs., not more than three inches in height, and having a mouth fully one and a half inches wide." 2nd. "The bodies should remain several days at least in the benzine." 3rd. "Drying. Lay the body on blotting-paper, but only for a few seconds, and then bury it immediately in powdered French chalk," &c. No. 1. The using a bottle such as Mr. Christy describes is unnecessary, and, I should think, expensive. This I will endeavour to prove. Take, say, a shilling bottle of benzine. Then put into a wine-glass one and a half or even two dozen more or less cleaned bodies of ordinary-sized Bombyces or Noctuæ labelled as usual. Pour a tablespoonful or so of the benzine into the glass, till the bodies are well covered; then place the glass in some safe place, and cover it over to keep out the air. This being done, we come to No. 2. I have *never* (in the above case) found it necessary to soak them for a longer period than twelve to eighteen hours. At the expiration of that time take them out and place them (as directed No. 3) on clean blotting-paper, but do not remove them in a few seconds; on the contrary, *leave* them there, and in a couple of hours or less the benzine will have evaporated, leaving the bodies without a vestige of grease and in faultless condition. No need of chalk, &c. It may be that too many bodies have been placed in the glass, or too little benzine, and consequently some of them may have to be re-soaked; but a little experience will soon rectify this. Throw away the saturated benzine and proceed as before with a new batch. As to the number of bodies that can be cleaned in this way by a shilling bottle of benzine, it depends of course upon their size; but take *D. coryli* among the Bombyces and *A. tragopoginis* among the Noctuæ, and I should say that such a bottle would suffice for at least six dozen. I have employed this simple plan for many years, and with unflinching success. Will Mr. Christy try it? As bearing on the

subject I may add this:—Take a corked zinc box (to be had of any dealer) and pour into it sufficient water to saturate the cork and then pour it off. When I receive, from a correspondent or any other source, a really good and well-set insect (but not cleaned) other than *Geometræ* or delicate species, I place it in this box, and shutting down the lid, leave it for twenty-four hours or more, according to size. It will then be sufficiently relaxed to enable you to at least make an *incision* in the abdomen, and in most cases to pick out some of the interior. Do not break off the body then, but reset the insect, and when dry the body will readily come off and be ready for the “wine-glass.” It may be objected that this resetting spoils the insect (certainly not if it has been well set in the first instance) and is troublesome and takes time. No doubt; but I would rather have one spotless specimen than fifty greasy ones. I agree, to a considerable extent, with Mr. Christy’s concluding remarks about the non-necessity of removing the insects from the setting-boards before they are thoroughly dry (though I should certainly do so in the case of valuable insects), and that the “greasers” may be left to some more convenient time; *but* let me warn him against leaving them till the grease reaches the thorax, of which more anon.

Mr. Arkle’s system applies to the whole insect, and not the body only. As regards his method in this case, I would suggest that “prevention is better than cure,” and that if he will kindly try my plan, as I have endeavoured to explain it above, he will save himself much expense and more trouble. But having adopted his method of soaking, I am directed to place the insect on a layer of plaster of Paris, and then cover the moth, wings and all, with powder of the same an inch thick, the result being, “the insect is clean and dry; all its colours are restored; no damage has been done to it—not even to the antennæ.” And here I bring forward my preliminary remark, that chalk is not only unnecessary, but often *injurious*. My experience as to its use is unfortunately in direct opposition to that of Mr. Arkle in every particular. In early days I tried this method, not of course exactly as here recommended, but according to the comparatively feeble lights of the “fifties,” when the cleaned bodies were filled with cotton wool! I have some antique specimens with the cotton wool still in their bodies. Still the system was, in the main, the same as Mr. Arkle’s; the “results” being, in *my* case, the cilia were matted together, ditto the antennæ, ditto the feathered abdomen; and the colours more or less blurred. The third of these results was especially noticeable in the genus *Dicranura*. The species in this genus are even now “puzzlers.” With all the modern improvements, I can never get the excavated body of a *furcula* and *bifida* to look as well after as before the operation. When therefore a common insect such as *Cossus ligniperda* or *D*



*vinula* is, or to speak more correctly, *was*, saturated with grease, I had the satisfaction of throwing it into the fire. With insects bred or captured by myself, no such "saturation" does or can occur, owing to the method which, for so many years, I have adopted, and which, I think I may say, discovered. If, however, I have a rare insect, or still worse, a good variety in this condition?—well, my first impulse is to shed a tear over it; but as this does not tend to remove the grease, I empty the body of (say *caja*), and cast the insect into the benzine, from which in due time it emerges—sometimes better, sometimes worse—generally worse. This, of course, is only my experience, and is not for a moment meant to impugn Mr. Arkle's statement. But he must be a more skilful manipulator than I am. But to go a little further. No one, I think, will maintain that the thin-bodied Geometræ (say the genus *Hybernina*), if allowed to saturate, can be submitted with impunity to the benzine. Only clean the bodies and they are safe for ever. Nay, it will be sufficient to simply break off the bodies and soak them in the benzine. If with a slight incision so much the better.

Before I conclude I must claim the indulgence of my readers for two or three remarks upon Mr. Anderson's communication on this subject. He says:—"Rarely, except in the case of the Sphingidæ and Bombyces, is it necessary to remove the contents," &c. I must dissent. Let him try the genera *Leucania* and *Non-agria*, and I think he will, at any rate, admit that it is *advisable* to do so. It may be that immersion for a fortnight or so may obviate this necessity, but when it can be done as effectually in a few hours by the former method, why not adopt it? How does Mr. Anderson prevent the evaporation of the benzine for a fortnight or even two or three days? He then suggests that grease may emanate from the *thorax*, and not the abdomen. I have never heard or read of this theory before, and I cannot think that there is the slightest foundation for it. Of the thousands of insects I have eviscerated, I have never found *one* with a greasy thorax after the operation. I agree most thoroughly with him as to the results of entire soaking, and I think he has described those results very happily. I shall be happy to answer by letter, as far as I am able, any questions which these gentlemen or others may address to me on the subject. I sum up with my favourite quotation, "Prevention is better than cure."

Rostrevor, Clifton, Bristol, April 4th, 1893.

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# A LIST OF COLEOPTERA NEW TO THE FAUNA OF JAPAN, WITH NOTICES OF UNRECORDED SYNONYMS.

By G. LEWIS, F.L.S.

As it will still be some years before a considerable part of the collection I gathered in Japan can be worked out, I am induced to publish in advance a list of species occurring there, but which are, up to this time, only known from other places. Some on the list are well-known European species; others are known from Siberia only. The synonyms are also new.

*Nebria leechii*, Bates, 1889 = *Nebria sadona*, Bates, 1883.

*Broscosoma elegans*, Bates = *Miscodera donitzi*, Harold.—Harold described his species from an imperfect and immature specimen, and assigned it to a wrong genus. I propose therefore to retain Bates's name for it.

*Siagonium haroldi*, Weiss, 1879 = *S. vittatum*, Fauvel, 1875.—This synonym is given on the authority of M. R. Fauvel.

*Saprinus rufipes*, Paykull.—I obtained this insect at Enoshima, near Yokohama. It is not rare in Europe.

*Shoguna*, Lewis, 1889 = *Pachycephala (Holocephala)*, Fairmaire, 1886.

*Ostoma gigantea*, Reitter, 1882.—This species is distinct from *O. grossa*, Linn., which I erroneously recorded (Ent. Mo. Mag. 1888, p. 221) as occurring in Japan. Herr Reitter has kindly sent me an example of his species from Siberia, which is much smaller than most of my specimens. My largest example measures 20 mill. I found this species on fungi growing on large oaks at the foot of Komagatake, on the 13th of July, 1880, and in August I obtained it near the lake of Junsai.

*Helota fulviventris*, Kolbe, 1886 = *Helota gemmata*, Gorh., 1874.

*Monotoma brevicollis* of authors.—This common European species occurs rarely in Japan.

*Byrrhus kamtschatikus*, Motsch.—I obtained several specimens of this species on Niohosan, at a very high elevation.

*Eurytrachelus*, Thomson, 1862 = *Serrognathus*, Motschulsky, 1861.—The type of *Serrognathus castanicolor*, Motsch., is an immature specimen of *Dorcus platymelus*, Saund., although Schönfeldt throws a doubt on this by separating the names in his Catalogue. I placed Saunders' species in *Eurytrachelus*, but Motschulsky's genus has the priority.

*Catharsius ochus*, Motsch. = *Copris ochus*.—This is a true *Copris*. Motschulsky placed it in the wrong genus.

*Geotrupes purpurascens*, Waterh., 1875 = *Geotrupes auratus*, Motsch., 1857.—The first name refers to a colour variety not infrequent in the female. This beautiful species varies in colour. The colours are blue-black, blue-green, blue, golden-green, golden-red, and cupreous, with intermediate tints of each.

*Aphodius diversus*, Waterh., 1875 = *A. solskyi*. Har., 1871; *A. rectus*, Motsch., 1866.

*Euchlora mongolica*, Falderm., 1835.—This species occurs at Niigata, and in some of the north-west provinces.

*Podabrus reinii*, Heyden = *P. heydeni*, Kiesw. 1879.

*Anomala holosericea*, F.—I found a single example near Chiu-zengi, and three others in S. Yezo.

*Cryptodactylus gracilis*, Schön., 1888 = *C. auriceps*, Saund., 1873.—Herr Schönfeldt gives the locality for this species as Arima, near Kobe. My original specimen was taken on Maiyasan, and in 1881 I swept two more from a shady bank between Kobe and Kioto; so up to the present time it seems to be a very local species.

*Laius flavicornis*, Kiesenw. = *L. kiesenwetteri*.—Kiesenwetter's name is occupied by Fabricius for a Javan species.

*Opatrum villigerum*, Blanch. Voy. Pole Sud. iv. p. 154, t. 10, f. 15.—I have three examples from Kobe. This species was originally described from specimens from Australia.

*Phaleria riederi*, Faldermann. *Phaleria hilgendorfi*, Harold, 1878 *Emypsara adamsi*, Pasc., and *E. flexuosa*, Pasc. 1866 = *Diaperis riederi*, Fald. 1833.—This is an apterous species. I took a dozen examples on the sand-hills between Hakodate and Nanai in August, 1880. Pascoe described two varieties as species. The elytra are sometimes wholly black, sometimes entirely pale; but the intermediate or variegated form figured by Faldermann, is the most frequent kind. The species is certainly congeneric with *Phaleria ornata*, Woll., and *P. cadaverina*, F.; all have a similarly large head with small eyes, and a narrow transverse metasternum. The 2nd and 3rd tarsal joints are dilated in the male, and are not generic characters as indicated for *Emypsara*.

*Platydemus dejeanii*, Cast. — Occurs at Nikko, Sendai, and Sapporo, and is not uncommon. This European species is also known from Siberia.

*Platydemus musiva*, Harold, 1878 = *P. nigroæneum*, Motsch., 1860. — Harold described the female; Motschulsky knew the male and perhaps the female also.

*Alphitophagus japonus*, Mars.—I have taken this species abundantly in Ceylon. There are Ceylonese specimens in the British Museum named by F. Walker, but priority cannot be claimed for his name.

*Uloma latimanus*, Kolbe, 1886.—This species seems to take the place of *U. bonzica*, Mars., in the northern parts of Japan. I have taken it abundantly at Nikko, and also at Sapporo. It occurs under fir-bark, and there is a pale variety of it which is small in stature, and corresponds to one noticed in *U. bonzica* by Marseul.

*Toxicum umbratum*, Harold, 1881 = *T. 3-cornutum*, Water., 1874.—Harold knew the female only.



*Upis violaceipennis*, Mars., is a species closely resembling *Eucyalesthes subviolaceus*, Motsch. Both species will go very well into the genus *Upis*.

*Dietyus confusus*, Pascoe, Journ. Ent. ii. 1866, p. 486.—I introduced this species to the Japanese Catalogue on the authority of an example given to me by Dr. A. Adams, but I have no doubt that it is Javan, not Japanese.

*Eustrophus dermestoides*, F.—I took three examples of this species in the forest lands of Sapporo.

*Bolitophagus reticulatus*, Linn.—I have taken this insect abundantly in Yezo on several occasions. It occurs in Scotland, and is also common in Siberia.

*Melandrya mongolica*, Solsky., Hor. Ent. Ross. vii. p. 378, 1871.—Mannerheim knew this species, but did not describe it; it occurs commonly in all the Japanese forests, and, like its congeners, varies much in size. My specimens measure 8 to 15 mill.

*Lagria decora*, Mars.—This species belongs to the genus *Eutropela*, of which there are four species known to me from Japan.

*Neocerambyx batesi*, Har. 1875, ♂ = *N. chrysothrix*, Bates, 1873, ♀.—Harold described the male, which has long slender antennæ. The female described by Bates has the terminal joints of the antennæ clavate. It is a nocturnal species, and flies into houses when attracted by light. It occurs in all the island apparently, but it is seldom seen. July is the month of its appearance.

*Stromatium asperulum*, White, 1855.—I am indebted to the late Mr. H. J. Pryer for three examples taken on Oshima, in the northern group of the Rui Kiu Islands. White described it from Hong Kong. One example measures 14 mill., another 26 mill.

*Moechotypa fuliginosa*, Kolbe, 1886 = *Scotinauges diphysis*, Pascoe, 1871.

*Leptura aterrima*, Motsch., Schrenk Reisen, Col. p. 147.—I have an example of this species taken near the Ishikari River in Yezo. Schönfeldt, in his Catalogue, unites this species with *L. dimorpha*, Bates, but they are distinct species. In *L. dimorpha* the elytra are "crebre-punctulatis"; in *L. aterrima*, "implicato-punctatis"; and the outline of the two insects is dissimilar. Bates states (Ann. & Mag. Nat. Hist. 1873, p. 195) that *L. atra*, Laich., and *L. aterrima*, Motsch., are conspecific; and Von Heyden, in his Siberian Catalogue, unites both with the European *L. æthiops*, Poda., 1761. On this I have no material to form an opinion, but I doubt Von Heyden's determination, because *L. æthiops* must have been a familiar species to Bates.

*Pachyta borealis*, Gyl. Ins. Suec. iv. p. 36.—I obtained a small series of this species at Chiuzenji; the determination was made by Mr. Bates after the publication of his last memoir.

*Grammoptera gibbicollis*, Bles.—I have this species from Tsusima (Vinegar Island).

*Donacia æraria*, Baly, 1869 = *D. lenzi*, Schönfeldt, 1888.—Baly was in error in assigning this species to the Chinese *D. æraria*, Baly. Schönfeldt does not refer to Baly's species in his description, but there is hardly any difference between the two, except that the antennæ are longer and more slender in *D. lenzi* than the other. It is abundant in the Kobé ponds and in lakes about Kioto and Osaka. It feeds on a water-lily.

*Donacia impressa*, Paykull.—I obtain this from a small collection made on the Ishikari River. I have a specimen also which I brought from Sapporo, which is not separable from examples of this species.

*Pachybrachys donitzi*, Harold = *P. eruditus*, Baly.—This species is so exceedingly variable in colour that no specific character can be based upon coloration alone. Harold was probably misled by having some specimens which did not quite coincide with Baly's description.

*Lema melanopa*, Linn.—This Eurasian species is scarce in Japan. I found it at Niigata, and I swept five examples on the Shiwojiri-toge in July, 1881.

*Luperodes præustus*, Motsch., Sol. Reis. ii. 1860, p. 232, t. 11, f. 19.—This species, by an oversight of mine, was not recorded by Mr. Jacoby in his memoir on the Japanese Phytophaga.

*Hispa japonica*, Baly, 1874 = *H. angulosa*, Solsky, 1872.—I have an undescribed species which resembles the above very closely.

*Coptocycla crucifera*, Kraatz, 1879 = *C. thais*, Bohem., 1862.—The first name represents a variety in which the dark markings have disappeared. Dr. Kraatz has kindly sent me his type for examination, and I have a corresponding specimen which was taken in association with typical examples.

*Languria geniculata*, Har., 1879 = *L. lewisii*, Crotch., 1873.

*Cyrtotriplax niponensis*, Lew., 1874 = *Triplax maackii*, Sols., 1871.—This is the commonest species of the genus in Japan.

*Coniopoda*, Gorham = *Danae*, Reiche.

*Cyanauges*, Gorham = *Cænomychus*, Gorham.—The latter name is suggested by Mr. Gorham, *Cyanauges* being preoccupied in Diptera. The food-plant of *Cænomychus* is an *Agaricus*, allied to, if not the same as, the European *A. atro-cæruleus* of authors.

*Ithone mirabilis*, Motsch.—I saw this species in immense profusion between Sendai and Awomori. I saw it for several days together, in clusters on the newly-erected telegraph-posts, when journeying from Awomori to Sendai. Out of these countless numbers I obtained two examples with the elytra entirely black. The species was originally recorded from Siberia.

*Hippodamia tredecimpunctata* Linn.—I introduce this species on specimens I found at Nikko and Kashiwagi.



## SUGGESTIONS FOR DECOYING BUTTERFLIES.

By H. G. KNAGGS, M.D., F.L.S.

SOME fifteen years ago, whilst strolling over the hills at Folkestone, a lovely *Argynnis aglaia*, female, at rest on ground herbage and evidently freshly emerged, arrested my attention. As she made no attempt to fly away, she was duly pinched and skewered with an ordinary pin which I happened to have about me, and stuck upon my hat, in the hope that some one might take a fancy to her. It was not long before a number of admirers, fritillaries like herself, came to pay their attentions to my captive; an occurrence which was set down at the time as a case of assembling, though so far as the *Rhopalocera* were concerned the experience was new to me, and I made a mental note that if I ever again wrote on the subject of the female attractiveness of the *Lepidoptera*, the *Argynnidae* would have to be included. Be that as it may, the remembrance of certain observations (alluded to in the 'Annual' for 1871) on the attraction of butterflies by coloured objects puzzled me as to whether the allurement might not be rather through the visual than the olfactory organs. As some of these notes date back twenty years or more, I should like, with your permission, to reproduce them, as for one thing they will probably prove interesting to your younger readers, and for another it would seem advisable that scattered facts of the kind should be brought together in a collected form.

First, Mr. Albert Müller writes, "I have this day seen *L. alexis* (*medon*) fly towards a very small bit of pale blue paper lying in the grass, and stop within an inch or two from it as if to settle; whether it mistook the paper for an insect of its own kind, or for a flower, cannot of course be demonstrated, but insignificant as it may appear, taken in connection with the recorded fact of *Macroglossa stellatarum* visiting painted flowers on papered walls (Entom. iii. 6), it may help to show that colour has, as Mr. Darwin teaches, a great deal to do in attracting insects to certain spots" (E. M. M., June, 1870).

In like manner it has been recorded that *Diptera* and *Hymenoptera* have been deceived, nor would it surprise me to learn that even night-flying moths may be similarly deluded.

Then, Mr. Hudd says that the above reminded him of a circumstance which came under his notice some years previously at Leigh; he writes:—" . . . Whilst resting under the shade of a tree, I noticed several specimens of *Argynnis euphrosyne* fly towards the handle of my umbrella, which was lying on the ground near me, and which much resembled them in colour" (E. M. M., August, 1870).

Again, Mr. Müller writes:—" . . . While plodding along a dusty high road in this neighbourhood (S. Norwood), a



male *G. rhamni* rapidly passed me on the wing. A few yards further on it suddenly arrested its straight flight and began to wheel round an object lying in the dust, which, on my coming up, I found to be a crumpled-up ball of rose-coloured paper: my arrival frightened the butterfly, and it continued its headlong career, but scarcely had I left the spot, when, doubling on its track, it rushed back and repeated the circling round the paper, descending repeatedly to within about an inch of it, but without actually settling. This time I watched its proceedings from a convenient distance without disturbing it. After a few minutes' bird's-eye view, the insect seemed to have made up its mind that there are such things in the world as rose-coloured balls, without the perfume and nectar of the rose; so away it went, and so did I. But imagine my astonishment to see it fly steadily a few hundred yards ahead, and then suddenly return to the ball, over which it performed similar aerial evolutions, till a band of noisy excursionists made the place too hot for it to stay . . . .” (E. M. M., June, 1873).

The next note was extracted, by my dear friend the late E. C. Rye, from the second part of the first volume, page 223, of ‘Timehri,’ the journal of the Royal Agricultural and Commercial Society of British Guiana, in which occurs an account of a visit to Mount Russell by the editor, Mr. E. F. Thurn, who thus describes the native method of decoying butterflies:—“The Indians of the place, seeing our interest in catching butterflies, exhibited various clever ways of entrapping these insects. To catch those of a yellow hue they picked and laid on the ground the flowers of a yellow *Bignonia* (*B. chika*), and this proved a most successful plan. Equally successful were they when they laid decaying Banana skins on the ground to attract the large blue *Morphos*; but an attempt to attract certain red species by displaying the ripe red fruit of the ‘faroah’ plant (*Bixa orellana*) was not successful. These methods of enticing insects were completed by inverting a round ‘quake’ (a wide mouthed basket of open wicker work) over the bait, taking care to raise the quake so that the lower edge was some inches from the ground. The butterflies attracted by the flowers made their way under the raised edge of the quake, and when the Indians approached flew, not out under the edge of the quake, but upwards into the top, and were thus captured” (E. M. M., June, 1883).

In the twentieth Report of the Entomological Society of Ontario, 1889, Mr. Denton, of Wellesley, Massachusetts, gives an account of his method of decoying butterflies; he says that, having caught a specimen of *Papilio turnus* (a butterfly far from common in his locality), he was surprised to see, while he held his capture between his forefinger and thumb, another of the species dart down and hover over it for a moment, as if to entice it away. He then placed the almost lifeless butterfly on a bush, partially

concealing himself, and awaited the return of the insect ; nor was he disappointed, in a short time it was in his net. Mr. Denton says that he has, in this way, taken as many as thirty-seven *turnus* in a day. Once he attracted *P. rutulus* by a yellow leaf placed in a conspicuous position, and he has found bright yellow paper, cut out to resemble this species in size, almost as attractive as the insect itself. He finds the best place to expose a decoy is in some sunny nook, where an occasional specimen of the species of which he is in search is seen, allowing the full rays of the sun (provided the decoy is a real butterfly) to strike on the expanded wings. It is usually his custom to cut down the green bushes, except perhaps one in the centre of the opening, and stripping the leaves from the tallest twig or branch, to place the decoy on the point. If he cannot get a decoy to start with he shoots one, for he says that any dilapidated specimen will answer the purpose. Mr. Denton adds that decoying is practised in Australia and New Guinea.

Mr. South (Entom. xxiv. 173), referring to this subject, says, "I understand that some collectors of tropical butterflies find it a good plan to use a decoy to facilitate the capture of the shy species of *Nymphalidæ*. When a specimen of a desired species is secured, it is killed and placed with its wings expanded either on the ground, or on a twig, within easy striking distance of the operator, who takes up a convenient position where he must be, as far as possible, concealed, and then await the arrival of specimens. Perhaps the would-be captor of *Apatura iris* may think it worth while to try a decoy in some haunt of H. I. M. Probably a dry set specimen would answer the purpose."

And lastly (Entom. xxiv. 244), Mr. T. E. Sansom, writing from Yokohama, says, " . . . . In various parts of the East I have found a dead *Ornithoptera*, or *Papilio*, an almost certain decoy, provided of course others of the species are about. In Java and Selangor (Malay Peninsula) when I caught a specimen too bad to keep, I always placed it in a convenient position for catching others it might attract. Of course a good specimen could not be so treated, as in two minutes it would be carried off by ants. Here in Japan, where ants are not so dangerous, I leave good specimens also, for a few minutes, in conspicuous positions as decoys. With *Papilio maackii* it is certain to attract others. After half an hour or so the attractiveness seems to cease, so I doubt if a cabinet specimen of *A. iris* would be of much use as a decoy."

So that, putting aside the question whether butterflies do or do not assemble by scent, it seems at any rate clearly established that they, or some of them, are endowed with a propensity to critically examine everything bearing the remotest resemblance to themselves, or to flowers or objects of a colour similar to their own : whether the allurement be attributable to a desire to assist



a fellow flutterer in distress, or to go snacks with the decoy in a fancied feast, or to the hope of discovering a new nectar,—whether the motive be love, or combativeness, or playfulness, or simply inquisitiveness, does not concern us much just now; it is sufficient for our purpose to know that butterflies are decoyable.

With respect to the practical procedure of decoying, two notions have struck me as possible improvements on the existing methods;—the first is a mechanical decoy with life-like movements, the second the more perfect concealment of the operator. With regard to the former, no doubt a lively insect, harnessed by a loop of fine silk drawn round the thorax between the anterior and posterior pairs of wings, with a foot or two of tether,\* would be most “fetching,” but I hesitate to suggest anything which savours of cruelty, though it would certainly be less objectionable on that score than the pinning of the living insect: nor do the requirements of the case seem to demand such a display of real vitality. I shall next proceed to show how the natural movements of the insect can be closely imitated by a person operating from a distance of ten or even twenty yards.

(To be continued.)

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## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 121.)

*MELITÆA AURINIA*, *Rott.*, *ARTEMIS*, *Fab.*—Widely distributed in Ireland, but very local. Often abundant in suitable localities, but apparently unstable and fluctuating in numbers, so that it disappears for years, or lingers in reduced numbers, as at Cromlyn, where the race, from which the var. *hibernica* was described, formerly abounded. The larva is very subject to parasites, which may in part account for the phenomenon. On the other hand, this butterfly has been known to increase so prodigiously that whole fields and roads become blackened by the moving myriads of larvæ. An instance of this was observed, by the Rev. S. L. Brakey, near Ennis, Co. Clare, where he drove out to see a reported “shower of worms,” and found as above described, the larvæ being so multitudinous in some fields that the black layer of insects seemed to roll in corrugations as the migrating hosts swarmed over each other in search of food. The imagines that resulted from the starved survivors were extremely small and faded in colour, one male of which is in my cabinet, 1 in. 3 lines in expanse. Larvæ found by me near New-

\* Since writing the above, I have been informed that this method has already been successfully employed in the case of *Colias edusa*, but I can find no record of the circumstance.—H. G. K.



castle station, Co. Wicklow, were infested with *Apanteles bignelli*, which up to that time was considered a local species by Mr. Bignell, having been named from a specimen from the same host, taken in the North of Devon. In describing the forms of this insect found in Ireland, I have found it necessary to traverse considerable ground and consult a number of authorities; and, as the local variations presented in the United Kingdom are numerous, consider that perhaps a short digest of the British varieties that have come under my notice may be acceptable, as they, together, form a catena of modifications in colour and design, whose links seem to require classification, and their relative positions determined. There are, it appears to me, three leading forms. The first is represented by Hübner's figure 653, which is, I understand, generally accepted as the typical form, Rottemburg's reference to the insect he named *aurinia* being vague. 1. With the fulvous patches of all the wings very uniform in hue, those of the central transverse bands of the fore and hind wings only slightly brighter in tone than the rest. The bases and reticulated ground pattern of a brownish black. The female somewhat brighter in tone, and more approaching the var. *præclara* in some instances. This—which is very rare in Ireland, occurring only, as far as my experience goes, as an aberration—is a common form in England, and the ordinary one of the Swiss Jura (Prof. Christ), and elsewhere on the Continent. I have met with it at Vichy, as well as at the extreme South of France at Hyères, where it is also accompanied by the var. *provincialis*, H.-S., in which the uniformity of coloration is still more pronounced, so that it may be described as of a pale washed-out fulvous ground colour, with slightly marked brownish reticulation. I am inclined to consider this type of *aurinia* to be probably a near approximation to the ancestral *Melitæan* type, since it combines the chief characters presented by the females of this genus, modified or developed diversely in the various species. The female of *M. cynthia* is especially close, while its male, on the other hand, has developed very striking central white bands, a divergence shown in a minor degree by the following varieties of *aurinia*. I have a specimen of very washed-out coloration, much approaching var. *provincialis*, taken at Newbridge with the var. *præclara*.

Var. *signifera*, var. nov.—This is a transitional form from Penarth, Wales. It is characterised as follows:—1. By the stronger black reticulation. 2. By the outer series of the central band of fore wing having acquired an ochreous tint, repeated occasionally in the last two spots of that of the hind wing, the rest of that series being almost obsolete and fulvous. 3. The cellule of fore wing is isolated by a broad black edging from the root of the wing, a trait also observable in a less degree in the basal blotches below the median nervule, the two areas so isolated reminding

one of the fore and hind wings of a *Tinea*. 4. On the hind wing the costal half of the fulvous submarginal band is *prolonged inward toward the base*, invading half of the central series of spots, and obliterating the costal half of the black base. This remarkably striking topomorphic variety I have described from a series kindly lent me by Mr. R. Adkin. I have seen Penarth specimens also in Mr. Tutt's cabinet. The fulvous costal base reminds one of that character in *M. didyma*. I have not noticed this form in Ireland. Expanse: ♂, 1 in. 5 lines; ♀, 1 in. 9 lines.

Var. *præclara*, var. nov. Cf. Hübner, figs. 4, 5 ♂, 6 ♀.—The second leading form is the one most commonly met with in Ireland, having the red and central pale series very vivid in colour, and the black reticulation darker than the type, and may be thus described:—Ground colour black, strongly and broadly marked, defining the coloured blotches sharply, but not reducing them in number or size. These are of brilliant terra-cotta tint, but the central transverse series (double on the fore wings) are of bright straw-colour. The female with the basal two-thirds of the wings black; the fore wing with the cell red, with a straw-coloured spot at basal end and a quadrate one toward the other; outside of the discoidal cellule follows a double series of straw-coloured elongated blotches, similar to the central one of the hind wing. On the inner margin two quadrate blotches of same colour. Submarginal red band often suffused a little with yellow. Hind wing with a straw-coloured discoidal spot, a short series of red following to mid-wing, a complete central straw-coloured series, and a submarginal pupilled quadrate series of terra-cotta red, outside of which are the marginal yellow lunules, larger on the hind wing than on the fore wing. The late Mr. Bond used to take this form at Kingsbury, Middlesex. Those taken at Swansea are similar, but somewhat less vivid in colour. The English *aurinia* run generally somewhat smaller than the Irish. The var. *præclara*, in its richest form, approaches the character of the continental *M. maturna*. Irish localities: near Golden Ball, Co. Dublin; the Wicklow Marshes, and Kilavany Wood near Tinahely (*Bw.*); Newbridge, Co. Kildare; Cappagh (*U.*) near Lismore; and Tramore, Co. Waterford; on a hill 200 feet above the sea-level near Cork, ? var. (Sandford, Ent. xviii. 123); Tralong Bog near Glandore (*D.*); Desertserges Station, south side of Bandon R. (*L.*); Blackstairs Mount, Co. Carlow (*M.*); Skibbereen, Co. Cork; Ardtully near Kenmare (*Miss V.*), and Killarney (*B.*), Co. Kerry; Kilpeaton Bog, Limerick, and at Cratloe, Co. Clare (*N.*); Woodlawn near Galway (*A.*). This variety is found in Scotland. Specimens from Alford, Lincolnshire, also are in Mr. Adkin's cabinet, but the colours are not quite so vivid as in the generality of Irish specimens, and the pale discoidal spot of hind wing is obsolete. Expanse: Lincoln, 1 in. 7 lines ♂, 1 in. 10 lines ♀; Irish, 1 in. 3 lines—1 in. 8 lines ♂, 1 in. 7 lines—1 in. 11 lines ♀.

(To be continued.)



## CAPTURES AND FIELD REPORTS.

## SPRING LEPIDOPTERA:—

*Hampshire*.—The following notes on recent captures and observations in mid-Hants may help to show what a remarkably early season it is:—*Anticlea badiata* was taken on April 1st, and *Hemerophila abruptaria* on the 2nd; *Cidaria suffumata* and *Triphosa dubitata* on the 4th; *Cidaria siderata* a few days earlier, when *Ematurga atomaria* and *Pachynemina hippocastanaria* were also out, the former very fine and dark specimens; on the 5th, *Eupithecia nanata* was taken, and *E. pumilata*; on the 6th, a single *Syrichthus malvæ*, two *Lycæna argiolus* (one rather worn), and *Pararge egeria*; *Pieris brassicæ*, male, was also netted, while *Gonopteryx rhamni* was in great force; another specimen of *Eupithecia pumilata* was taken, and two more *E. nanata*; several *Vanessa polychloros* were seen on the 7th, and a few more *Pararge egeria*; also *Pieris napi* and *Saturnia pavonia*.—SAVILE G. REID, Capt. R.E.; Froyle House, Alton, Hants.

*Hunts*.—I found a perfect *Saturnia pavonia* female on a hawthorn hedge, on April 5th, at Molesworth, Huntingdonshire. She had laid fifty-two eggs on the twig where she was resting.—(Rev.) F. H. WOOD; 4, St. Paul's Terrace, Northampton, April 12, 1893.

*Kent*.—Rhopalocera:—*Pieris rapæ*, one in our garden, March 24th; and another in a field the following day. *Gonopteryx rhamni*, a fine male, flying along a bank near Bexley, March 8th. *Vanessa urticæ*, several, in fair condition. Heterocera:—*Saturnia pavonia*, saw a fine female in a friend's breeding-cage, March 13th; the pupæ had been kept in a cold room, and were not in any way forced. *Asphalia flavicornis*, a male in my breeding-cage, March 3rd; I afterwards took a female from birch, and a few males on the lamps. *Tæniocampa gothica*, at present I have only taken one, a male, at fallow, March 13th. *T. incerta*, only one male of this insect, also at fallow, March 13th. *T. populeti*, a friend took a male flying around a lamp, March 13th. *T. stabilis*, common at fallow. *T. munda*, I have not taken it myself, but have heard of a few at fallow. *T. pulverulenta*, abundant at fallow. *Cerastis vaccinii*, common around the lamps in February, swarming at fallow in March. *Scopelosoma satellitia*, a few at fallow, only one in good condition. *Brephos parthenias*, saw three in West Wickham Wood, March 11th; and am now taking them commonly in Jayden's Wood. *Phigalia pedaria*, two males on lamps, February 2nd; common from that date till March 13th; only one female. *Nyssia hispidaria*, I did not work for it this year, but took a nice male, with whitish hind margin and hind wings, in West Wickham Wood, March 11th. *Biston hirtaria*, a friend bred a male, March 13th, and took a female the next day; I also bred a male, March 23rd. *Amphidasys strataria*, female in the breeding-cage, March 7th; I have bred three females this year, in which the usual chocolate markings are replaced by black and very dark brown; none of the specimens bred emerged before dark, the wings rarely being dry before 7.30. *Hybernia rupicaprararia* does not appear to be very common here; I have only seen a few males on the lamps. *H. leucophæaria*, the first on a lamp, February 2nd; it has been very common this year; I often took about thirty males from Dartford Heath fence after a south-westerly gale. I have taken all the varieties described by Mr. Arkle (Entom. xxv. 123, 145), with the exception of *marmorinaria*; another variety, of which I have seen three specimens, has, within the grey band, a dark central shade of the same colour as the boundary lines, the remainder



of the wings agreeing with the type; a common variety has all the wings pale brown, faintly marked with darker brown, the central band merely indicated by the boundary lines. Two females taken this year differ from the one described by Mr. Arkle (Entom. xxv. 146) in the following particulars:—thorax with three longitudinal dark lines; legs dark brown, dusted with grey; trochanters and knees grey. *H. marginaria*, males common on lamps, fences, &c., from February 4th; two varieties of the female have the lines across both fore and hind wings black, rather wide, the entire space between the second line and the base filled up with black-brown, the space between the second line and the hind margin rather darker than the type; there are also two wavy dark lines near the hind margin. *H. defoliaria*, three males at lamps, January 23rd, and another on the following day; one was the unicolorous variety. *Anisopteryx ascularia*, males common on lamps, fences, &c., from February 14th. *Cheimatobia brumata*, males common on lamps during January and early part of February; last specimen, a male, February 17th.—P. J. LATHY; Bexley Heath, March 26, 1893.

The following is a list, with dates, of butterflies I have myself seen or caught in this neighbourhood during March:—*Vanessa urticae*, several on the 8th; common during the last ten days of the month, but very much worn. *Gonopteryx rhamni*, one male, in good condition, caught on the 8th. *Vanessa io*, single specimens on the 23rd and 28th. *Pieris rapæ*, one male on the 26th; it had become quite common by the 28th. *P. brassicae*, one on the 31st.—D. P. TURNER; Havelock Road, Tonbridge, April 4, 1893.

*Middlesex*.—The effect which the wonderful weather of the past seven weeks or so has had upon the times of emergence of Lepidoptera has been most marked. Taking, for example, *Euchloë cardamines*, the following are the dates upon which I have first observed this species during the last three years:—1891, May 31st; 1892, May 7th; 1893, April 19th. Everything seems nearly three weeks earlier than in 1892; and fully five weeks earlier than in the wet and backward spring of 1891. I may remark that I observed *Nisoniades tages* flying in some abundance yesterday; in other years it is seldom on the wing till the middle of May.—HENRY D. SYKES; The Cedars, Enfield, April 23, 1893.

*Surrey*.—On April 4th, my brother's eldest son and myself saw three specimens of *Pieris brassicae* in our garden.—T. H. BRIGGS; Surrey House, Leatherhead.

On March 31st, *Brephos parthenias* was exceedingly common, flying round the birches in West Wickham Woods; indeed, over a hundred were seen during my short stay of about two hours. *Asphalia flavicornis* was also seen on the wing twice, but as we had no nets with us were unable to make any captures. I again visited West Wickham on Easter Monday, and was greatly surprised to find that *B. parthenias* had very considerably diminished in numbers, for at the close of a whole day's work I was only able to get four fairly good examples of this insect. Amongst other things worth mentioning were two nice *Panolis piniperda* and two (a male and female) *Amphidasys prodromaria*. These latter were freshly emerged specimens, and were taken on oaks at about a height of two inches from the ground.—F. J. ROBINSON, Jun.; Surrey Cottage, Water Lane, Brixton, S.W., April 6, 1893.

*Tephrosia crepuscularia* has turned up in considerable numbers at West Wickham this season. It is to be taken on trunks of both the firs and oaks,

which abound in the woods; and it only requires about half an hour's diligent search for one to become possessed of a score or more fine specimens. Just now *T. biundularia* is also to be taken, though sparingly; and *Lobophora lobulata* is decidedly common.—F. J. ROBINSON, Jun.; April 17, 1893.

*Co. Cork, Ireland.*—On the 27th of March I took *Thecla rubi* and *Lycæna argiolus*. *Vanessa io* is plentiful; but *V. urtica* seems rather scarce. So far no *Gonopteryx rhamni*.—H. McARTHUR.

**SPRING LARVÆ.**—I only went larvæ-searching one night, Feb. 11th. I then worked in the lanes; larvæ were very plentiful; the genera *Leucania*, *Xylophasia*, *Noctua*, and *Triphæna* were well represented. I have also taken a few larvæ of *Uropteryx sambucaria* from ivy. Out of several larvæ of *Geometra papilionaria* sleeved on birch, only two have survived the winter. I have young larvæ of *Amphipyra pyramidea* feeding on lilac and hawthorn; and *Hadena proteus* on hawthorn.—P. J. LATHY; Bexley Heath, March 26, 1893.

**EARLY APPEARANCE OF LYCÆNA ARGIOLUS.**—*L. argiolus* began to appear here on April 2nd. This is very early for it, as I do not, as a rule, take them till the middle or end of the month. To-day I took out my net and captured six—five males and a female—and saw three others. All the specimens captured are in fine condition. On March 23rd I saw a small "white," which was probably *Pieris napi*, but was unable to capture it, so that I cannot say for certain. *Pararge egeria* began to appear on the 24th.—ARTHUR RASHLEIGH; Menabilly, Par Station, Cornwall.

**COLIAS EDUSA IN APRIL.**—On April 5th I saw a specimen of *Colias edusa* flying along a bank here in the sunshine, but not having a net with me was unable to take it; and another on the 8th of the month. They evidently had hybernated, as that species was very plentiful here last year, especially near the sea, where they were constantly flying about over the rocks; there were also a few of the variety *helice* taken.—A. RASHLEIGH.

**LEUCANIA L-ALBUM IN JERSEY.**—*Leucania l-album* was very common at ivy in Jersey last year. The following notes are copied from my diary of 1892:—September 25th, caught three *l-album* at ivy, near Bagot; 28th, took one more at same place. October 11th, caught two at St. Clements; 15th, caught five at same place; 19th, caught two at same place. These last three entries refer to the same plant of ivy, which was growing on a rock in a field near the sea-shore.—STANLEY GUITON; Bath Street, Jersey, March 29, 1893.

**NYSSIA HISPIDARIA, &c., IN LEICESTERSHIRE.**—On March 6th I found six *Nyssia hispidaria* in Charnwood Forest in this county. Last year I obtained, in the same locality, a melanic specimen of *Phigalia pedaria* (*pilosaria*); and also two melanic specimens of *Amphidasys betularia*. On March 22nd I took here (four miles south of Leicester) two *Hybernina progemmaria*, var. *fusca*, dark unicolorous forms; and Rev. C. T. Cruttwell, rector of Kilworth, tells me that he took the same variety last year at Kilworth; and this year, two suffused brownish dusky specimens, intermediate between the ochreous dusky type-form and the dark form.—W. G. WHITTINGHAM; South Wigston Vicarage, Leicester, April 11, 1893.

**BISTON HIRTARIA IN FEBRUARY.**—With reference to Mr. Bird's note on the above (Entom. 129), I had a female emerge on February 12th, 1891, in a breeding-cage kept in an outhouse. Is was, however, a cripple.—HARRY MOORE; 12, Lower Road, Rotherhithe.



## NOTES AND OBSERVATIONS.

CLOSTERA ANACHORETA.—When a discussion, to which I am a party, degenerates into personalities, I at once withdraw. Not a single paragraph in either or both of Dr. Knaggs' communications has the slightest bearing on my original contention, that *C. anachoreta* could not be justly considered an *indigenous* British species. If Dr. Knaggs, having carefully examined and understood my alleged facts as to its history in this country, can disprove them,—or if, failing to do that, he can disprove or materially modify the inference which I draw from those facts,—well and good. In default of this, I decline to continue the discussion.—(Rev.) J. GREENE.

HOMOPTERA AND TERRUBIA ROBERTSII?—Has not Mr. Billups made a great mistake here? (p. 141). Has he not taken for a fungoid growth the waxy filaments which emerge from the abdomen, &c., of *Liptra pulverulenta* or *Phenax auricoma*? At any rate, the specimen should be examined by a competent authority.—HARRY MOORE; 12, Lower Road, Rotherhithe.

DESTRUCTIVE INSECTS IN AFRICA (p. 135).—The South African locust, or Voet-ganger, though it destroys the herbage, does not deprive stock of food. A colonist who collected for me in the Amatola Mountains, Cape Colony, informed me that sheep, oxen, and horses feed on them, and always improve in condition after a flight. When a swarm settles on the line, railway traffic is greatly impeded. Upon one occasion a train was delayed 2½ hours between Maltera and King William's Town, their carcasses not allowing the wheels to bite.—HARRY MOORE; 12, Lower Road, Rotherhithe.

ANCESTRAL COLOURING OF LEPIDOPTERA.—Mr. Frohawk calls attention (Entom. 97) to the frequency of the occurrence of white spots in *Argynnis paphia*, and suggests that in primeval times only brown, black, and white forms existed, and that white spots "may be instances of reversion to a later transitional stage." I suppose this is still a debatable point; but it certainly is remarkable that, in the figure given of Mr. Carpenter's capture of July 23, 1892, the white spots, as far as they go, are identical with those in the female of *Argynnis sagana*, Dbld., from Eastern Siberia and Japan, one of the finest known examples of a supposed archaic type. In the specimen I possess the ground colour approaches very nearly that of *A. valesina*, only the white blotches (including a beautiful series of angular spots within the margins) occupy about a fourth of the entire area. In this connexion, may not the male of *Melitæa cynthia* be considered another partial survival of, or reversion to, the ancient form? Mr. Jenner Weir, in September, 1886, exhibited, before the South London Natural History Society, specimens of *A. paphia* and *A. euphrosyne* with white spots on the wings, and both he and Mr. South advanced ingenious theories to account for them. The former gentleman also again, in October of the same year, produced specimens of *Vanessa cardui* and *Colias electra* from Grahamstown, with similar albinic characteristics. In October, 1887, Mr. South, after an exhaustive series of experiments with concentration of the sun's rays on portions of the pupæ of *Vanessa io*, withdrew his former theory. Again, in April, 1887, Mr. T. D. A. Cockerell read a paper before the same Society, in which he accounts chemically for colour variations, especially in cases of albinism and melanism. Other theories have also been put forth, and yet we hardly seem to have advanced beyond the fact that there is, in constant operation, a mysterious law of Nature which



impels individuals, with more or less frequency, to assume partial characteristics of what are generally believed to be very ancient forms; and, as Nature is said to work in cycles, it is probable that our descendants in some future æon will be once more surrounded by an animated nature as sombre as it is now brilliant.—R. S. STANDEN; 67, Earl's Court Square, S.W., April 6, 1893.

THE HAIRS OF *ACRONYCTA ALNI* LARVA.—An article on the hairs of *A. alni* (Entom. xxv. 39), which just falls under my hand, revives my desire to ask those who devote themselves to the preservation of larvæ for their experience with those of this insect. Those conversant with the process know that in drying an empty skin a considerable amount of heat is necessary; but to whatever reasonable degree this is carried, the hairs of a larva are never affected, and if inadvertently it is carried beyond this, then skin and hairs shrivel up simultaneously. In the preparation, however, of the fairly numerous number of larvæ of *A. alni* I have tried, I find a quite exceptional occurrence. On arriving at a very moderate point of heat, less than normally required to stiffen a skin, the two large flat-tipped brushes on the second segment invariably shrivel up suddenly, much in the way it may be imagined the antennæ of a *Rhopalocera* might do, while all the other hairs remain unaffected like the bristles of any ordinary larva. This appears to point to these two brushes not being true hairs at all, but hollow tubes of a quite different construction. In the live state the appearance of these brushes is already exceptional, and gives some such idea. I have no means of applying a really powerful microscopical examination to find the explanation; but I invite the experience of other entomologists who have preserved any number of this larva, and also ask those who have a powerful lens to examine these brushes minutely. The phenomenon is certainly such as has not come under my notice with any other larvæ; and I claim a pretty extensive experience with both British and foreign.—N. F. DOBREE; Beverley, E. York, March, 1893.

GYNANDROUS EXAMPLE OF *SATURNIA PAVONIA*.—A fine specimen of *S. pavonia* (*carpini*) emerged, on March 29th last, with male wings and antennæ on one side, and wings and antennæ of the female on the other side. It is an extraordinary specimen, and I was not aware that this species was subject to gynandromorphism.—CHAS. E. MORRIS; Vernon Lodge, Preston, Brighton, March 31, 1893.

MIGRATORY LOCUSTS.—Can any readers of the 'Entomologist' inform me if they know of the occurrence of any species of migratory locust in the British Isles within the last ten years or so?—W. HARCOURT BATH; 195, Ladywood Road, Birmingham.

DECTICUS VERRUCIVORUS.—Will any reader who is interested in Orthoptera kindly let me know if this fine grasshopper still occurs in the Rochester locality, where it was found in such abundance many years ago by Professor Henslow?—W. HARCOURT BATH.

*COLIAS EDUSA* ABSENT FROM THE BROAD DISTRICT.—While the entomological papers have been so full, during last summer, of the abundance of *C. edusa* in the majority of the English counties, it may be interesting to note the absence of it (as far as my experience goes) in the Broad district of Norfolk, where I was collecting from Aug. 11th to Sept. 17th. I may mention that *Vanessa atalanta* and *V. io* were both very plentiful, and other

Rhopalocera were by no means unusually scarce. I should be glad to hear of any theory to account for the rarity of this species in a district apparently so well fitted for insect life, while in the surrounding districts it appears to have been plentiful, *viz.*, in Cambridgeshire (Entom. xxv. 275), and I have seen a number of specimens from the coast of Suffolk round Aldeburgh.—F. P. BEDFORD; 326, Camden Road, N., March 29, 1893.

SUGARING.—In reference to Mr. Garrow's remark (Entom. 136) as to the failure of sugar on moonlight nights, several times last year I took insects freely at sugar, even when the moon was shining brightly. In July I captured several *Leucania turca* when the moon (which was nearly full) was shining on the insects as they sat at the sugar. During the last week the Tæniocampidæ have visited willow blossoms in large numbers, with the full moon shining in an absolutely cloudless sky. If they are attracted to willows, why not to sugar also?—J. H. D. BEDLES; Kidding-ton Rectory, Woodstock, April 3, 1893.

ENTOMOLOGY OF GRIMSEY.—The Entomology of the island of Grimsey, situated 12 or 20 miles N. of the north coast of Iceland, and almost opposite the Eyjafjorde, has never, so far as I am aware, been investigated. The place is difficult of access, and unvisited by the steamers from Copenhagen that periodically call round the coast of Iceland, and its inhabitants are reported to be rude and barbarous. Unlike the numerous islets and skerries that form an archipelago in the immediate neighbourhood of the west coast, Grimsey is sufficiently far from the mainland to possibly repay an enterprising naturalist by some characteristic features of its own. The following is an extract from a letter of Th. Thoroddsen, the geologist of Iceland, relative to Grimsey:—"Keyhjairh, 21st April, 1890. It would be of great interest for the distribution of insects in arctic regions to get some information on the Entomology of Grimsey; but it is very difficult to get to that island, as the mail steamers do not call there. In the year 1884 I was so fortunate that I could visit that island with a Danish man-of-war, but stayed there only a few hours. A letter about my call there is published in 'Nature' (vol. xxx. 770). I collected only few plants, which I have given to the Botanic Museum of the University of Copenhagen." The most available means of visiting Grimsey would doubtless be to charter a sailing-boat from Akeneyli, at the southern extremity of the Eyjafjorde, about 30 miles from the Arctic Ocean; or else to prevail on the captain of the Danish steamer, by offering him a sufficient consideration, to make a short *détour*, to allow of a few hours' visit to the island, as I imagine it is within his discretion to call at other ports besides those mentioned in the sailing bill.—F. A. WALKER.

A FINE SUMMER PREDICTED.—The following extract is from a letter which appeared in the 'Chester Chronicle' of March 25th:—"Our esteemed friend, Admiral Massie, of Chester (he was a midshipman at the battle of Navarino, 1827), frequently calls on me for the 'Weather Record.' On the 21st he paid us a visit, and asked how is the wind and barometer. I told him the wind at 6.15 a.m. was steady at North-West by North. With a twinkling eye and smiling face he at once corrected me:—'Nor-rard-West by Nor-rard, nautical phrase, you know.' 'Now then,' said he, 'we are likely to have six months grand weather. Through a cycle of years, if the wind blows steady before, on, and after the 21st, it has indicated good



weather for months. Search your record.' I have done so, and find that for the last forty years the Admiral's remarks are correct." — J. ARKLE; Chester.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*March 29th, 1893.* — Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Ernest Swinhoe, of Avenue House, Oxford, was elected a Fellow of the Society. Mr. G. C. Champion exhibited, for Mr. A. E. Stearns, a living specimen of a luminous species of *Pyrophorus*, which had been found in an orchid-house at Dorking. It was supposed to have emerged from the roots of a species of *Cattleya* from Colombia. Mr. A. H. Jones exhibited living full-grown larvæ of *Charaxes jasius*, found by Mr. Frederic Raine, at Hyères, feeding on *Arbutus unedo*. Surgeon-Captain Manders exhibited a series of *Lycæna theophrastus* from Rawal Pindi, showing climatal variations, the rainy-season form being of darker coloration, and larger than that occurring in the dry season. The ground colour of the former on the under surface was markedly white with deep black striæ; in the latter form the ground colour was distinctly reddish, and the marking reduced to reddish lines. He said that the latter form had been described as *L. alteratus*. Mr. F. Merrifield mentioned that Dr. Weismann had now established that the colouring of *Chrysophanus phlæas* in different climates or seasons, though in part attributable to the actual temperature, was in part constitutional. Mr. S. G. C. Russell exhibited a beautiful variety of *Argynnis selene*, taken near Fleet, Hants; two varieties of *A. selene* from Abbot's Wood, Sussex; typical specimens of *A. selene* and *A. euphrosyne* for comparison; and a remarkable variety of *Pieris napi* from Woking. Mr. C. J. Gahan exhibited a microscopic preparation of the antenna of a beetle (*Pterostichus*), for the purpose of demonstrating the sensory nature of the so-called "appendix" of the antenna. Since he wrote a note describing this structure, a short time ago, he found that Professor Beauregard had already suggested its sensory character, and was inclined to believe that it was an auditory organ. Mr. H. Goss exhibited a specimen of *Trogus lapidator*, Grav., believed to have been bred from a larva of *Papilio machaon* taken in Norfolk by Major-General Carden. Mr. Goss stated that he sent the specimen to the Rev. T. A. Marshall, who said it was a well-known parasite of *P. machaon* on the Continent, but not proved to exist in the United Kingdom. Mr. Merrifield said he knew this parasite, and had bred several specimens of it from *P. machaon* received from Spain. Colonel Swinhoe read a paper entitled "The Lepidoptera of the Khasia Hills. Part I." A long and interesting discussion ensued, in which Mr. Elwes, Mr. Hampson, Colonel Swinhoe and others took part. Mr. W. Bartlett Calvert communicated a paper entitled "New Chilean Lepidoptera." Mr. J. W. Shipp communicated a paper entitled "On a New Species of the Genus *Phalacrognathus*."

*April 12th.* — Frederic Merrifield, Esq., Vice-President, in the chair. Sir John Talbot Dillwyn Llewelyn, Bart., exhibited a number of specimens of Lepidoptera, Coleoptera, and Hymenoptera, all caught or bred in Glamorganshire. The Lepidoptera included two remarkable varieties of *Vanessa io*, both obtained from the same brood of larvæ, from which the usual eye-like spots in the hind wings were absent; varieties of *Arctia menthastri*; a long series of melanic and other forms of *Boarmia repandata*



and *Tephrosia crepuscularia*; and bleached forms of *Geometra papilionaria*. The Coleoptera included specimens of *Prionus coriarius*, *Pyrochroa coccinea*, *Otiorhynchus sulcatus*, and *Astynomus ædilis*, which latter species Sir John Llewelyn stated had been handed to him by colliers, who obtained them from the wooden props used in the coal mines, made out of timber imported from the Baltic. Mr. Merrifield, Dr. Sharp, Mr. Bower, and Mr. Stevens made some remarks on the specimens. Sir John T. D. Llewelyn enquired whether the name of the moth, which had a sufficiently long proboscis to fertilize the large Madagascan species of *Orchis*, *Angræcum sesquipedale*, was known. Mr. C. O. Waterhouse stated that the collections received at the British Museum from Madagascar had been examined with the view to the discovery of the species, but up to the present it had not been identified. Mr. H. Goss exhibited, for Mr. Frank W. P. Dennis, of Bahia, Brazil, several nests of trap-door spiders containing living specimens of the spider, and read a communication from Mr. Dennis on the subject. Several photographs of the nests and the spiders were also exhibited. It was stated that Mr. Dennis had found these nests at Bahia in one spot only in a cocoa-nut grove close by the sea. Mr. McLachlan read a paper entitled "On species of *Chrysopa* observed in the Eastern Pyrenees; together with descriptions of, and notes on, new or little-known Palearctic forms of the genus." The author stated that the species referred to in this paper had been observed by him in the Eastern Pyrenees, in July, 1886, when staying with Mons. René Oberthür. After alluding to the nature of the district, and its capabilities from an entomological point of view, the paper concluded with descriptions of certain new palæarctic species of the genus. Dr. Sharp, who said that he was acquainted with the district, and Mr. Merrifield made some remarks on the paper.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 23rd, 1893.*—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. R. Adkin exhibited the following species of Diurni from Sutherlandshire, N.B., viz., *Pieris brassicæ*, L., *P. rapæ*, L., and *P. napi*, L.; *Argynnis selene*, Schiff., *A. euphrosyne*, L., and *A. aglaia*, L.; *Epinephele janira*, L.; *Cænonympha typhon*, Rott.; and *Thecla rubi*, L.; and commented on the similarity of the forms shown to those occurring in the South of England. He noticed, however, in the *C. typhon*, that although there was considerable variation in the colour, in none were the dots on the hind wings prominent as in many of the Rannoch specimens. The specimens of *A. selene* and *A. euphrosyne* shown were so remarkably alike as to render it extremely difficult to distinguish with certainty the one species from the other. Mr. H. Moore exhibited a striking example of fasciation in the young wood of *Salix capræa*; also an example of the transference of the scales to paper of an Indian butterfly of the Nymphaline group. Mr. W. Mansbridge stated that the specimen he previously exhibited as *Hybernia defoliaria*, Clerck., was a melanic form of *H. aurantiaria*, Esp., Mr. A. W. Dennis having drawn his attention to the fact. Mr. Mansbridge exhibited a drawing of the antenna of these two species, showing the difference existing; also dark *Odontopera bidentata*, Clerck., from Forres, N.B.; a strikingly light specimen of *Hybernia leucophaæria*, Schiff.; and a series of *Polia chi*, L., var. *suffusa*, from Horsforth, near Leeds, darker than those from either Bradford or Huddersfield, and therein differing from Mr. Tutt's experience as previously expressed. Mr. H. A. Auld exhibited a species of *Cassida* from Fort White, Upper Burmah. Mr. T. W. Hall

remarked on Mr. Moore's exhibit of *Salix capræa*, and Mr. Mansbridge said he had seen the same peculiarity in liliaceous plants. Mr. J. M. Adye exhibited two living examples of *Moma orion*, Esp. (forced), bred from New Forest larvæ of 1892. The exhibit was made in metal boxes, and a discussion ensued, Mr. Tugwell considering they would store heat, and so make the enclosed insects restless; but Mr. Winkley said he had used this form of box for *Argynnis paphia*, L., &c., without harmful results. In further illustration of the phenomena of mimicry, Mr. Jenner Weir exhibited *Nebroda echaia* var. *jacksoni*, which was closely mimicked by both a Nymphaline and Papilionine species, viz., *Hypolimnas mima* and *Papilio cenea*, ♀, the latter species being the southern form of *P. merope*, which was remarkable for the polymorphic and polychromatic varieties of the female. Mr. Weir also exhibited two other similar instances, species from Western Africa and Northern India, being also mimicked by both Nymphaline and Papilionine species, and made some interesting comments thereon.

April 13th.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. Edwards exhibited, through the President, a specimen of *Papilio govindra* from the Himalayan region, Mr. Weir remarking that the species was a mimic. Mr. R. Adkin read an extract from an interesting letter, addressed to Mr. Billups, by Mr. T. D. A. Cockerell from Jamaica, and exhibited the leaves containing the species of Coccidæ referred to. Mr. Manger exhibited *Dorippe japonica*, a crustacean from Japan. Mr. Adkin exhibited a small collection of Sphinges and Bombyces from Sutherlandshire, N.B., consisting of *Sesia scoliiformis*, Bork., *Arctia caia*, L., *Dicranura vinula*, L., *Orgyia antiqua*, L., *Nemeophila plantaginis*, L., and *N. russula*, L., the male specimen of which had smoky hind wings; and *Odonestis potatoria*, L., the coloration of the female being intermediate between the sexes. Mr. Perks showed a bramble leaf from Chessington, Surrey, corroded by a microscopic fungus. The Secretary, Mr. H. Williams, read a letter from Mr. Robson, of Hartlepool, requesting aid from members of the Society in filling up forms he had prepared, asking for certain information as to meteorological conditions, &c., when sugaring for Noctuæ; and thus, by comparing results from different parts of the country, Mr. Robson hoped to come to some conclusion regarding some of the anomalies of this subject. Mr. Robson said he would be happy to send forms to any applicant for same. Mr. Turner reported the capture of *Eupithecia nanata*, Hb., *Ematurga atomaria*, L., and larvæ of *Thera firmata*, Hb., *T. variata*, Schiff., and *Ellopija fasciaria*, Schiff.; and Mr. Carpenter said that *Thecla rubi*, L., had been taken at Eynsford, Kent, on April 3rd, and *Syrichthus malvæ*, L., on April 9th. The remainder of the evening was devoted to a long discussion with regard to the proposed excursions of the Society during the ensuing summer.—F. W. HAWES and H. WILLIAMS, Hon. Secs.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—April 10th.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. H. W. Bowler, Lisbon Road, Broadgreen, was elected a member of the Society. Mr. John Watson read a paper entitled "Notes on three Hybrid Silk Moths.\*" The author, in speaking of these hybrids, stated that he had microscopically examined the female hybrids, and found them infertile, there being no trace of an ovary. He also stated that the hybrid larvæ spun double the weight of silk in forming the cocoon than either of the

\* This paper will be published in the June 'Entomologist.'—ED.



parents. Dr. H. H. Corbett read a paper entitled "Notes on the Lepidoptera of Doncaster." He enumerated the Lepidoptera taken by him around Doncaster, and drew attention to the local variation of several of the species; he also exhibited and described *Lithocolletis cerasicolella*, a species which he had recently added to the British list. Mr. Watson exhibited *Papilio elvesi*, female, from Central China, which, as far as he knew, was at present unique. The President exhibited *Papilio machaon*; and Mr. Newstead, a collection of Coccidæ formed by Miss Tomlin in Madras.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*March 29th, 1893.* Mr. G. H. Kenrick, V.P., in the chair. The following were exhibited:—By Mr. R. C. Bradley, insects from Sutton, including *Eubolia cervinaria*, &c. By Mr. G. W. Wynn' insects from Wyre Forest, including *Dicranura bifida*, *Lobophora hexapterata*, &c.; also *Smerinthus tilia* from Hanbury Park. By W. W. Harrison, *Amphidasys prodromaria*, from Arley, &c. Mr. G. Kenrick read a paper "On the occurrence of the black variety of *Amphidasys betularia*." He said that it was first described by Millière in 1859, from a specimen from Yorkshire; at that time it seems to have been a new and exceptional form. In 1869, Newman says of the species, "some are black." Since then it seems to have been getting more and more common, until now we find it contributing a large proportion of the whole. Mr. Kenrick mentioned the various theories of the causes of black forms of insects, but dismissed them all as inadequate to explain the origin and increase of this. He thought this might have come about in the following manner:—In all cases offspring more or less resemble their parents, sometimes one only, sometimes both; at times the tendency is very strong for them all to resemble one parent only. When breeding *A. betularia*, using one type and one var. *doubledayaria*, it has been noticed that most of the offspring are black; therefore, it may be, a chance black example has bred and been perpetuated in this manner. It is a hardy species; the blackness of the variety seems neither to assist nor injure it, and therefore there would be no selection of either form; and it can easily be seen that if the offspring of any pair, where there is only one black form, tend mostly to become black, then the form would rapidly increase, as this appears to have done. The paper was discussed at length by the Rev. D. J. Nurse, Messrs. G. T. Bethune, Baker, R. C. Bradley, and C. J. Wainwright.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 17th, 1893, Annual Meeting.*—Mr. Gibson, of Queen's College, was elected a member. An abstract of the report of the Secretary and Treasurer showed the Society to be in a very satisfactory condition; thirty-one members were elected during the year. The meeting held fortnightly during the University Terms had been well attended, and the exhibits numerous and interesting. The following were elected officers for the year:—President, Mr. F. V. Theobald, B.A., F.E.S.; Vice-President, Mr. A. M. Moss; Librarian, Mr. A. Jones; Secretary and Treasurer, Mr. W. Farren, F.E.S.; Council, Mr. T. H. Bryan, M.A., Mr. J. C. Rickard, Mr. M. White. Mr. Rickard exhibited British specimens of *Saperda carcharias*, an unnamed species of the genus *Necrophorus*, *Trichiosoma betuleti*, *Sirex gigas*, a dark variety of *Vespa vulgaris*, *Reduvius personatus* and its pupa, *Bombylus major*, and an unnamed *Tachina*; and from South Africa,



two species of scorpions, "trap-door" spiders and their nests or galleries. Mr. Theobald, larva, pupa and imago, in spirits, of *Tipula maculosa*; and a number of specimens of a species of *Agromyza*, the larvæ of which had been found doing considerable damage, mining the leaves and shoots of chrysanthemums in greenhouses.

*March 3rd.*—Mr. F. V. Theobald, President, in the chair. Mr. W. H. Seyfang, of St. Peter's College, was elected a member. Mr. Moss exhibited a *Sialid* (species?) from Rome, and a box of Lepidoptera, most of which he had "forced" during January; among others were specimens of *Papilio machaon*, *Smerinthus tilia*, *Notodonta ziczac*, and, most noteworthy, a series of *Bombyx rubi*, on which he contributed notes to the following effect:—The larvæ were found in the autumn, and placed in a cold frame. In January, the grass and moss placed in the frame for the larvæ to hide in was found to be frozen, so much so that before the larvæ, which were curled up among it, could be extricated, it had to be placed in a warm room to thaw; at first sight the larvæ appeared to be dead, but subjected to a temperature of about 80 degrees, or more, several assumed the pupal stage within five days, and in ten days from this—fifteen days from the time the apparently frozen larvæ were moved into the warm—they commenced to emerge, a very fair proportion of the larvæ producing moths. The discussion was continued by Messrs. Theobald, Farren, Fitzroy, and Jones. Mr. Theobald exhibited some larvæ of an unknown species of *Tipula* in rotten wood, from Gloucestershire—microscopic slides and photos. of them; also a larva of *Simulium*, a larva of a new *Tanytus*, and an undescribed dipterous and its pupa. Mr. Jones, a series of *Agrotis exclamatoris* and its varieties. Mr. Farren, *Orphiedes demoleus*, taken in South Africa by Mr. J. C. Rickard, and varieties of *Papilio machaon* from Wicken Fen, and remarked on the philogenetic value of certain corresponding markings; a bred series of *Orobena extimalis*, Scop. = *margaritalis*, Schiff.; and representative species of Pterophori, Crambi, Tortricæ and Tineæ. Mr. Bryan read a paper on "Relaxing and Setting Insects," and exhibited appliances and drawings in illustration. A long discussion ensued, Messrs. Theobald, Jones, Farren, Bull, White, and others taking part.—WM. FARREN, *Hon. Sec.*

PENARTH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The fifth Annual Meeting was held in the Penarth Public Hall on Wednesday, March 22nd. An Evening Conversation, which was well attended, was presided over by F. H. Thomas, Esq., R.C.A., President of the Biological Society of Cardiff, who in a brief address referred to the advantages of entomological research, and to the fact that many interesting objects of Natural History were rapidly becoming extinct, and no traces would be preserved but by the work of such Societies as this; he also advised the formation of botanical and geological sections. Mr. F. Mason gave some amusing details of a visit to Fiji. The Annual Report was presented by the Secretary, and showed the Society to be in a flourishing condition. It stated that the season of 1892, as a result of the prevailing fine weather, had proved the most successful which the Society had yet experienced. A valuable addition to the Library had lately been made, by the purchase of Owen Wilson's 'British Larvæ and their Food-plants.' A selection of vocal and instrumental music was given during the evening; and at intervals, in an adjoining room, some beautiful objects were exhibited with a lime-light microscope, by Mr. J. Storrie, late Curator of the Cardiff

Museum. The room was suitably decorated with plants, flowers, pictures, &c., and on lines of tabling in the centre and around the Hall were arranged cases of insects, birds, shells, corals, sea-weeds, ferns, fossils, &c., and a variety of interesting curios. Sir J. T. D. Llewelyn, the President of the Society, sent valuable contributions from his splendid collections, considered to be the largest in the West of England. The members of the Society exhibited upwards of 150 cases, most of the insects in which were captured in the neighbourhood, proving the richness of the district from a naturalist's point of view. A special feature in the arrangements was the opening the Exhibition in the afternoon, from 3 until 6 o'clock, to afford—especially for the younger portion of the community—the advantage of an inspection by daylight of the vast number of interesting objects which had been gathered together; the schools of the neighbourhood were well represented, and a considerable number of other visitors availed themselves of the opportunity. All the arrangements were eminently successful, and the desire was fully expressed that similar exhibitions might be held on future occasions.—J. WALLIS, *Hon. Sec.*

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#### RECENT LITERATURE.

*A Monograph of Oriental Cicadidæ.* By W. L. DISTANT, Fellow of the Entomological Societies of London, Belgium, France, and Stockholm. Author of 'Rhopalocera Malayana,' 'A Naturalist in the Transvaal,' &c. With 15 plates (partly coloured) and woodcuts. Published by order of the Trustees of the Indian Museum, Calcutta. 4to, London, 1889—1892, pp. xiv, 158.

THE completion of this important work (delayed by Mr. Distant's visit to the Transvaal during its progress) has been awaited with much interest by all Homopterists, and we heartily congratulate the author on the successful completion of his undertaking. He states that his unpublished catalogue of Cicadidæ contains about 82 genera and 720 species, of which 34 genera and 268 species (nearly all of which are figured) are included in the present work, which deals with Eastern Continental Asia, and the greater part of the Malayan Archipelago, as far as New Guinea. We could have wished that Australia, Tasmania, and New Zealand, had also been included; but we presume it was necessary to limit the extent of the work, not, perhaps, so much on account of the actual number of Australian species as because the large size and remarkable character of many of them would have required additional plates to illustrate.

Mr. Distant's preface deals chiefly with general matters relating to the geographical distribution, habits, &c., of the insects; and we are pleased to find that he closes by gratefully acknowledging the good work done by his artist, Mr. Horace Knight. He concludes his book with a good general index, and another of geographical distribution.

The bulk of the work consists of descriptions of genera and species; and in the case of species which the author has not been able to examine at home, the original description is reproduced. This is well, and a far more satisfactory course than that adopted by some authors, of giving an independent description of a species which they have con-



jecturally identified with that of a previous writer, often without comparison of types on the one hand, or any reference to the original description on the other. We cannot, however, agree so cordially with Mr. Distant in the extremely unsatisfactory manner in which he frequently ranks the species of other authors as synonyms without sufficient comment or explanation. It is true he says candidly (p. 20, note) "in treating other entomologists' species as 'varieties,' I am of course, in the absence of breeding experiments, expressing my own views alone"; but this is a very different matter from including a species described by Walker from the Cape (*Platypleura gemina*) among the synonyms of the common East Indian *P. nobilis*, Germ., without further remark than that Walker's locality is "clearly erroneous." If the specimen differs, it is probably a distinct species; while even if it does not, there is no *à priori* reason why the same species should not be found in Africa and Asia, which would be simply an interesting fact in geographical distribution.

Every excuse must be made for difficulties in the verification of the species of the old authors; but too little care has certainly been taken in this direction also, and we cannot think that if either Mr. Atkinson or Mr. Distant had compared Linné's description of *Cicada repanda* in the 'Museum Ulricæ,' p. 159, they would ever have applied the name to Walker's *Platypleura interna*, which differs in almost every particular stated by Linné. Nor is this the only instance in which Mr. Distant appears to have accepted the *ipse dixit* of another entomologist, without verification, when the correct identification of a species is open to grave doubt, as in the case of Stål's identification of *Platypleura ciliaris*, Linn.

The synoptic tables of genera are extremely useful, but would be more so if they had been drawn up in such a manner as to apply to the females as well as the males throughout. We are aware that synoptic tables are very difficult to prepare, and the least error renders them misleading; but still we think that too little attention is paid by many writers to female insects when describing genera and species in which the secondary male characters (*e. g.*, the drums of Cicadidæ) are of unusual importance.

Little is known of the metamorphoses of the Cicadidæ, and it would not be fair to blame Mr. Distant for not giving us more information on the subject. We have no doubt that much useful information might be derived even from an examination of the empty pupa-cases, which are common in our collections, if they were always ticketed with the name of the species to which they belong, but unfortunately this is rarely the case; and otherwise such specimens are almost useless for scientific purposes. We must not omit to add that when a species is found in more than one locality, it would always be well to state the locality from which the specimens which are regarded as typical, as well as of any species figured, were obtained.

We are sure that the study of Cicadidæ will be largely promoted by the publication of this valuable work; and if we have ventured to point out a few of what appear to us short-comings, it is only to indicate the lines on which we think still more useful work may be done in future. We must remember that it is much easier to criticise than to avoid error or incompleteness.



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## ON THREE HYBRID SILK-MOTHS, HYBRIDISED AND BRED IN NORTH AMERICA.\*

BY JOHN WATSON.

JUST at present, when there is so much discussion going on with regard to hybrids and hybridisation of insects both here and in North America, I thought it not out of place to make a few remarks on, and to exhibit, three hybrid moths which I have received from my most esteemed correspondent, Miss Morton. It seems to me, on calling to mind the list of hybrids which have been produced by crossing representatives of the genera *Saturnia*, *Platysamia*, *Antheræa*, and *Actias*, that the New World entomologists are far ahead of those of the Old World in this interesting and valuable branch of scientific research; I say valuable, because I think there is no more certain method of discovering whether an insect is merely a variety of a species or a true allied species, than by, where possible, crossing specimens of the doubtful species; this method would be to pair the supposed variety and species together; if they are two distinct species, and a pairing was obtained and imagoes resulted from the hybrid ova; then, even supposing there was not in their progeny a male and female out together to pair again, an examination, either microscopical or otherwise, of the contents of the abdomen of a female would, I fancy, conclusively prove, by the absence or presence of eggs, the bona fides of the doubtful parents to rank as species or varieties. I have examined the bodies of three female hybrids in my collection (by relaxing and emptying the body-contents into 50 per cent. alcohol, macerating and staining in borax-carmines, and mounting for microscopical examination), and in none of these was there anything in the body I could by any stretch of the imagination liken to the egg-tubes or oviducts which are so plentiful in the bodies of female moths, even after they have deposited all their ova. This is to my mind a very important

\* Read before the Lancashire & Cheshire Entomological Society, April 10th.

point. If a species and its variety, or two varieties of one species, were paired, fertile progeny would be produced; and if a pair of specimens of this progeny would not pair, or even if two did not emerge at the same time; then again, the examination of the body of a female would disclose ova in the oviducts, proving that this female was one of the progeny of one species, as it was fertile. Of course it is far more difficult to examine and report on a male specimen, the spermatozoa being so very difficult to determine under even advantageous conditions; at least I have found it so, and I can also speak for other fellow-members of the Manchester Microscopical Society. I think, except amongst that grandest order of all the Flora, the Orchidaceæ, in which I have produced seeds even amongst such widely separated plants as *allied genera*, it is quite the rule for hybrids to be unfertile; I only know of one instance of a hybrid moth laying ova; but whether even these *could* produce larvæ, if fertilized, I do not know and very much doubt. Miss Morton wrote to me last autumn to say, in answer to a query of mine as to whether she ever heard or knew of a hybrid moth depositing ova, that she never had a hybrid to lay eggs, but a friend of hers did have one which laid a few. This is, I think, an exception. There is in France, and at one time rather extensively cultivated under the name of the "Ailantine" moth, an insect which was reputed to be a *fertile* hybrid between *Attacus cynthia* and *A. ricini*, and which I have always viewed with a doubtful eye as to its being a true hybrid. Apart from another source, I think it is now conclusively proved that *ricini* is merely the Burmese local polyvoltine or many-brooded variety of the common *cynthia*. My friend Mark L. Sykes, Esq., and myself have had a considerable discussion over a number of specimens he bred from pupæ sent to him as *ricini*. They are certainly more like the figure of *ricini* given in Mr. Wardle's 'Handbook of the Wild Silks of India' than the ordinary *cynthia*, but slightly different from the specimens of *ricini* in my collection; however, I had collected for me in Bengal a large number of *ricini*, which I understand are bred there on *Ricinus* as the Eria or Arrindi moth, and sent here in papers; these differ considerably from either my other Burmese specimens or Wardle's illustration, inasmuch as the pink bar on the primaries is merged into the crescentic moon-spot, whereas in *cynthia* they are separated, the pink bar being nearer the edge of the wings. For the last three years Mr. Sykes has been breeding the progeny of the original specimens on privet, and now at the third generation it is very difficult to tell which is *cynthia* or *ricini*, the pink bar has receded from the edge of the wing and the position of the lunar spot has altered to that of my imported *ricini*, and yet Mr. Sykes's original parents were from the North American naturalised stock of the common *cynthia*, the broods yearly showing the merging into *ricini*; this I think

proves that the *fertile* hybrid is a cross between a species and its *variety*.

That the Saturniidae offers, on account of the sembling habit of their males, unusual facilities for hybridisation, there is, I think, no doubt; and this, I suppose, is the reason there are more cases of hybridisation in this group, Miss Morton having produced no less than four, and three of these four are accountable for my writing on the subject. Miss Morton's method is as natural as it is ingenious and simple, and briefly speaking is as follows:—A fresh female of the rarer species is tied on the *outside* of a muslin cage, and *inside* the cage are one or two fresh females of the commoner species. This cage is taken to the spot where the common species occurs and hung upon a tree. The males are attracted by those of their species in the cage, and being unable to pair with them, pair with the tied female of the other species. This seems to me to be a very simple method, and far more natural than the forcible pairing of two insects by apposition, which I know is done, especially to produce ova from rare insects.

Two remarkable points I wish here to mention: Miss Morton wrote to me in April or May last, "Is it not strange I have just had imagos" of hybrids "out of 22-months-old cocoons." I had a few of these cocoons sent to me last March, along with some other cocoons, but, owing to that pernicious Washington post office, these did not arrive till May, when all the pupæ had emerged except one hybrid and one *P. ceanothi*; these I have now living and apparently healthy, their lives having been saved to me by their laying over for another year. The hybrid has thus been in pupa 33 months, surely a long time without nourishment.

Another remarkable result of hybridisation in the *Platysamias* is the excessive amount of silk spun by the hybrid larvæ; cocoons in my collection and from which the moths have emerged, average as follows:—

<i>Platysamia-cecropia</i>	.	.	.	12.5 grains.
„ <i>gloveri</i>	.	.	.	8 „
„ <i>ceanothi</i>	.	.	.	6.5 „
<i>Ceanothi-cecropia</i> , hybrid	.	.	.	19.5 „
<i>Gloveri-cecropia</i>	„	.	.	19 „

Whether this great increase of silk production is common to all hybrid Saturniidae I do not know, and it would be interesting if others who have series of cocoons of hybrids and their parents, would weigh them and record their weights. The three hybrids I have on exhibition now are—

A. The result of *Actias selene* (female), India, paired with *Actias luna* (male), N. America.

B. *Platysamia gloveri* female, paired *P. cecropia* male.



C. *Platysamia ceanothi* female, paired *P. cecropia* male. Besides these, other hybrids I know of in the Saturniidæ are as follows:—*Platysamia columbia* crossed *P. cecropia*; *Saturnia carpini* crossed *S. spini* or vice versâ, shown at the Entomological Society of London by the Hon. Walter Rothschild, June, 1892; *Antheræa mylitta* crossed *A. yama-mai* and *A. pernyi* and *A. mylitta*. I was offered ova of this hybridisation about four years ago, I think; but if this was the exact cross I am not quite certain.

Of the life-habits, or descriptions of the larvæ of these hybrids, I can give no particulars beyond an abstract from Miss Morton's letter dated November 3rd, 1892. Referring to *selene-luna* she says:—"The larvæ were very like *luna*, only more richly coloured, and most of them were considerably larger than any *luna* I ever saw; the cocoons were very different from either *luna* or *selene*, pale-coloured and silky, *thinner* even than *luna*, and the hybrids are very beautiful, the males a great deal handsomer than male *luna*, with very pointed primaries (like *selene*), but the eye-spots a bright pink; a few have the pink streaks on the anal angles like *selene*, but most of them are only whitish with the faintest blush only. The females are more like female *luna*, only considerably larger, with the eye-spots all pink instead of yellow." In regard to this *thinner* cocoon, it may be thinner than *luna*, but not having any on hand I cannot say whether they are *heavier* than either parents. Another point and in which the hybrid differs from those of the *Platysamia* group is shown in the same letter as follows:—"I was considerably disappointed in the coming out of the moths in August and September, instead of wintering over as *luna* does with us." I have not yet examined the silk of these hybrids microscopically, so cannot yet say if this will be intermediate between that of their two parents.

The moths are intermediate between their respective parents in colour, shape, and markings, though there is a variation in the specimens I have seen, towards either of their parents. The *selene-luna* do not show in either of my specimens any trace of the small oblique dash of red which runs from the costal nervure on primaries to the ocellus as is seen in *luna* though not in *selene*; nor is there anything like an intermediate amount of the beautiful white down on the bases of the wings found so plentifully on *selene*. The male hybrid leans towards *selene*, and the female towards *luna*. In hybrid B, *gloveri-cecropia*, I unfortunately have not a specimen of *gloveri* to hand to give a minute description of any intermediate variation; the hybrids, however, are slightly paler than *cecropia*, and the white bar between the ocelli and the margin is with only the faintest trace of the red outer edge so noticeable in *cecropia*. These bars in *cecropia* are indented and curved, but in the hybrids are much less indented,

and those on primaries are not nearly so bent as *cecropia*, and on both wings are broader than *cecropia*; outer margin of secondaries of same shade as primaries, not darker as in *cecropia*, the whole insect being slightly below the size of *cecropia*.

Hybrid *C. ceanothi-cecropia*.—This is nearer, to my mind, to *cecropia* than *ceanothi* in size and shape of wings though intermediate in markings, but a lighter colour than either parents. The costa of primaries of *ceanothi* is straight for three-fourths its distance from the base, in the hybrids it is arched all the way as in *cecropia*; the outer margin of the secondaries of *ceanothi* are not rounded as we find in *cecropia*, and in this again the hybrids distinctly take after *cecropia*. The costa of secondaries of *ceanothi* have a dip in them; in *cecropia*, arched; the costa of hybrids, as in their primaries, is arched also. The white bar on the wings of the hybrids, however, conforms much more nearly to *ceanothi*, and the ocellus of both primaries and secondaries is intermediate in shape between their two parents, having the width of *cecropia* and the length of *ceanothi*, in which species, as in the hybrids, the outer point merges into the white bar on the secondaries. The under side of secondaries of *cecropia* has a whitish band commencing at the base, where it is slightly wider, running round the costa and meeting the white band of the outer margin. In *ceanothi* this band is nearly obsolete, but on the costa and a little from the base is a pinkish spot. In the hybrids this spot is dilated into an elliptic or spindle-shaped spot, running to the base of the wing on the one side, and on the other side narrowed out into a mere streak along the costa till it meets marginal band of white, into which it merges.

In conclusion, whilst writing these descriptions, I have thought to make up a list of hybrids occurring in the Bombycidae, and would like information of any which are known, giving particulars as to which species was used, as male and female parents, sexes of hybrids, and which parent each sex takes after.

177, Moss Lane East, Moss Side, Manchester.

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## THE WEST INDIAN SPECIES OF DACTYLOPIUS.

By T. D. A. COCKERELL, F.Z.S., F.E.S.

THE genus *Dactylopius*, Signoret, includes the Coccidæ commonly known as mealy-bugs, and consists at present of forty-one known species. Of these, sixteen have been described by Maskell, eleven by Signoret, three each by Bouché and Coquillett, and one each by Linné, Gennadius, Boisduval, Comstock, Douglas, Niedielski, Newstead, and Lucas. A few



other names have been proposed by different authors, which are now put aside as synonyms.

The West Indian species have never yet been studied, although, in Jamaica, at least, they are fairly numerous. I have up to the present time recognised seven, and doubtless others remain to be discovered.

(1.) *Dactylopius virgatus*, n. sp.

♀.— $4\frac{1}{2}$  mm. long. Very white mealy brown above, except dark purplish grey subdorsal stripes, which are broadly interrupted centrally. Caudal filaments about 2 mm. long, *i. e.*, about half length of body. No obvious lateral appendages. Segmentation distinct. Beneath whitish, legs pale brown. The caudal filaments are rather slender, but not filiform like those of *D. longifilis*. The lateral appendages seem to be represented by long and very fine hairs, which are obvious in the young, but are lost in the adult. Very young individuals are pale yellow. Femur (of adult) about as long as tibia; tibia about three times as long as tarsus. Antennæ with eight joints, —3 and 8 subequal, or 8 a little longer; 2 sensibly shorter than 3; 4 rather longer than 5; 5, 6, and 7 about equal.

♂.—Brown. Antennæ brown; all the joints with long hairs,—3 longest, longer than 1 and 2, decidedly longer than last; 4 same length as 6; 5 a very little shorter than 4; 7 decidedly shorter than 6, and slightly shorter than 5; 8 same length as 7; 9 still shorter, but not quite so short as 1; 10 same length as 5. The second joint, which is about as long as 7 or 8, is conspicuously enlarged, much thicker than the joints following.

On a tree in East Street, Kingston, Jamaica, in enormous numbers. The females, with their cast-off skins, covered the whole under surface of the leaves, which turned yellow and dropped off. The leaves are ovate-acuminate, fleshy, entire; stalks reddish, with some long spines, very glutinous.

In June, other specimens were found on a fruit tree. These, boiled in caustic soda, turned madder colour, and stained the liquid claret colour; but apparently this red staining, or most of it, came not from the Coccids, but from a small fruit they were on. Still, the insects themselves were afterwards seen to be bright red. The eggs are minute, elongate, stained pale pinkish after the soda treatment. In one of the individuals of this lot I noticed a knobbed hair on the tibia.

In addition to the form described above, I have found several kinds of *Dactylopius*, which I was at first disposed to regard as distinct species or subspecies; but, after comparing them with *D. virgatus*, I do not think they can be separated, except as mutations or varieties.

(a.) Var. *farinosus*. ♀.—Adult, resembles *virgatus*, but the dorsal bands nearly obsolete; in one example at least they are quite so, the whole dorsal surface being covered by the white powder. Segmentation distinct. The dorsum and sides emit fine hairs, some of them very long, but, as they have no secretion on them, they are inconspicuous. The caudal filaments, about half length of body, or slightly less, are thickly covered with secretion. There are no lateral processes. Length of body, about  $\frac{1}{4}$ th inch. The legs and antennæ are pale brown. The female is active. Antennæ with 3rd and 8th joints longest; then 2. Joints 6 and 7 stouter than 5, and 5 stouter than



4; 4 and 3 of equal stoutness. Joints emitting sparse whorls of hairs. Tibia about as long as femur; tarsus not half length of tibia. Tibia emitting several short stiff hairs. Claw with curved clubbed digitules, longer than claw; no tarsal clubbed hairs seen.

On *Prosopis juliflora*. East Street, Kingston, Jamaica. September, 1892. Common on the ends of the twigs, &c.

(b.) Variety. ♀.—Adult, much as in var. *farinosus*; the place of the bands of *virgatus* is indicated by pits or depressions in the secretion, producing two pairs of thoracic and three pairs of abdominal spots or patches on the back, the abdominal patches each emitting a hair. This form is, therefore, intermediate between *farinosus*, in which the dorsal surface is covered with white powder, and *virgatus* proper, in which the secretion is locally absent, so as to give the appearance of bands.

On *Acalypha*, on the leaves. Parade Garden, Kingston, Jamaica.

A specimen measured was  $3\frac{1}{2}$  mm. long; with the caudal filaments, 2 mm. long.

(c.) Variety. ♀.—Adult, about 4 mm. long, thickly covered with white mealy substance. Caudal filaments thick, nearly as long as body. Lateral filaments obscure, or none. Legs and antennæ brown. Eye very large, its inferior margin notched.

On sweet sop (*Anona*). Kingston, Jamaica.

This is very like var. *farinosus*, but the caudal filaments are longer. It may be worth while to state that in giving the length of the caudal filaments in this species, the length of the longest filament is quoted. I have noticed that the left filament is sometimes shorter than the right.

(d.) Var. *humilis*. ♀ (not adult).—About 2 mm. long. Caudal filaments white, rather thick with secretion; less than 1 mm. long. Body pale lavender-grey, with the segmentation distinct; a moderate amount of mealy powder, and no dark dorsal line, but some indication of a light one, due to secretion. Legs and antennæ pale brown. No lateral projections, but a few hairs free from secretion, especially close to the caudal filaments, where they are as long, or nearly as long, as the filaments, and about seven in number on each side. Caudal stylus between the filaments distinct, about quarter length of filament. Eyes black and distinct. Antennæ of 8 joints,—3 longer and more slender than 2, but hardly as long as 8; 4 to 7 subequal, and shorter than 2. First joint with a few long hairs; no very long hairs on eighth. Claws with knobbed digitules, the knobs larger. Tarsus with the usual knobbed hairs, but the knobs almost obsolete. Tibia with a row of stout hairs or bristles on inner side, and a row of finer ones externally. Tibia about twice as long as tarsus; and as long as, or even a little longer than, femur. Later on, more fully grown individuals were observed, nearly 4 mm. long. Very young ones are yellowish.

On *Tribulus cistoides*. East Street, Kingston, Jamaica. July, 1892.

At first I thought this was a distinct species, but now I feel sure it is only a form of *virgatus*. On September 29th, I found undoubted *D. virgatus* in great abundance, young and adults, on *Tribulus cistoides*, in East Street. The adults swarmed on the fruits.

(To be continued.)

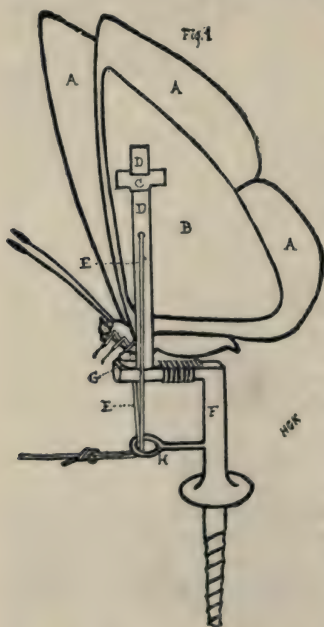
## SUGGESTIONS FOR DECOYING BUTTERFLIES.

BY H. G. KNAGGS, M.D., F.L.S.

(Continued from p. 157).

In the contrivances, suggested for snaring butterflies, which follow, doubtless many shortcomings will be found, upon which it is to be hoped your readers will look indulgently. Still if the principle of mechanical decoying should be adopted by collectors, the work here commenced will assuredly be perfected by others. The plan proposed may, at first sight, appear to be a little complicated, but there is really nothing which cannot be overcome, at trifling expense, by a moderate amount of ingenuity—a commodity with which the entomological fraternity are supposed to be well stocked. And now for business. Fig. 1 shows a side view of the apparatus for working the decoy, and gives the position of the insect; but in the completed mechanism the wings would be covered beneath by the card B, Fig. 1, while the thorax and abdomen, being encased in D*a*, Fig. 3, would not be visible from below. Fig. 2 shows the action, *viz.*, the alternate depression and elevation of the wings. Fig. 3 explains how the decoy is made.

*Firstly.*—File flat the top of the horizontal part of a medium sized “dresser-hook,” F, and whip on with “waxed end” three-

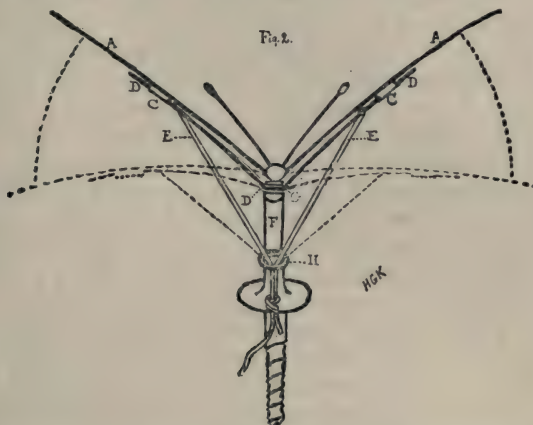


quarters of an inch of watch-spring, G. Next solder (or whip) on a metal loop, H, about half-way down the brass perpendicular part, and then screw the iron portion into the top of a peg of hard wood, about an inch square at the upper part and tapering downwards, some six inches, to a point, but screw it into one of the corners in such a manner that the rest of the top surface may be available for driving the peg into the ground.

*Secondly.*—Bend another piece of watch-spring, D, two or three inches long according to the size of the decoy to which it has to be fitted, into the shape indicated in Fig. 2. In doing this no heat must be used, or the temper of the steel will be lost; on the other hand, no sudden or excessive pressure must be applied, or the spring will snap. The best way is to cautiously and patiently work

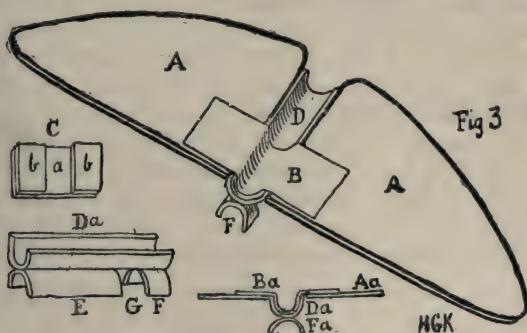
it with the fingers in the direction of the original curve, until the requisite angle is obtained, and then to straighten out the

two arms, giving just a slight curve in the opposite direction towards the extreme tips; the spring may then be perforated for the thread E, as shown in the figure. But as this perforating, though certainly the best and most workman-like job, is difficult



to do even by the aid of heat, another and easier plan will be suggested further on. The spring may now be slipped, at its middle, under the shorter spring, G.

*Thirdly.*—Cut two pieces of card, A A, Fig. 3, larger than the expanded wings (to be afterwards trimmed off when the latter have been attached), thus affording more protection from damage to the decoy than if the cards had been cut smaller. Next cut out, and bend to the shape indicated, three pieces of card, D a, E, and F, and glue them firmly together, as shown in Fig. 3, leaving a space at G, through which the bent spring (D, Figs. 1



and 2) has to pass; then hinge the pieces A A to D by means of a strip of linen or tape B, as shown at A a, B a, D a, in Fig. 3; but this must be so managed that the wing pieces have free movement upwards and downwards.



The slot, C, Fig. 1, through which the spring D should pass loosely, is made in the way shown at C, Fig. 3, *i. e.*, two bits of thick card about an eighth of an inch wide, *b b*, are glued on to a larger piece of card, *a*, about half an inch wide, and when dry the surfaces *b b* are brushed over with glue, and stuck on the card B, Fig. 1 (= the underside of A, Fig. 3), at the point indicated, that is, if the spring be perforated; but if the spring is entire, as mentioned in the alternative and easier plan, then the slot should be so placed that its upper edge is about level with the spot marked as perforated in Fig. 1, in which case it will merely be necessary to slip loops of silk, thread, or fishing hair over the free end of the spring D beyond C. When both sides of the decoy have been thus treated, bring the ends of the threads down through the loop H, taking care that both are exactly of the same length, and connect them with a length (10 or 20 yards) of the finest "water cord," such as used for running fishing tackle, the pulling at which will produce a close imitation of the movements of the living insect. Now comes the delicate operation of separating the wings from the thorax of a specimen of the species required, and glueing the thorax with head and abdomen attached into the groove, D, Fig. 3, and the wings on to A A, Fig. 3, in as nearly the normal position as possible.

It is a question in my mind whether the male or the female should be used to decoy; my inclination is towards the brightest coloured insect, the male, and it is just possible that the flashing in the sun of a decoy, made of steel blue tinsel cut to the shape, might prove effective in the case of *Apatura*. In the event, however, of a living, or recently killed, insect being employed (non-mechanical), the female might probably prove the more enticing, for I cannot even yet quite give up the idea that there are two kinds of attraction, one by scent, the other by sight.

Supposing that anyone should wish to keep a set of decoys, the following would suffice. One prepared dresser-hook and peg, two or three different sized bent springs, and as many species of butterflies ready mounted as decoys as might be considered necessary, and these might be kept in a suitable receptacle. If this reminds one somewhat of those curious collections of impossible flies so inseparable from the noble art of fly fishing, our next consideration is forcibly suggestive of the machinations of the Whitechapel bird-catcher, and consists in a spring net which may be worked from the same distance as the decoy.

(To be continued.)

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NOTE ON *HELOTA GEMMATA*, GORH., AND  
*HELOTA FULVIVENTRIS*, KOLBE.

By C. RITSEMA, Cz.

IN a "List of Coleoptera new to the fauna of Japan, with notices of unrecorded Synonyms" (see *ante*, p. 150), Mr. G. Lewis declares *Helota fulviventris*, Kolbe, 1886,\* = *Helota gemmata*, Gorh., 1874.† This assertion is, however, incorrect. Both are undoubtedly distinct species.

The female sex of *Helota fulviventris* differs from that of *gemmata*, as is correctly indicated by Mr. Kolbe (*l. c.*), by its apical ventral segment, this being somewhat longer, and having no apical depression. Moreover, the apices of the elytra are rounded in the female of *fulviventris* (see the figure which accompanies Kolbe's description); in that of *gemmata*, however, they are acuminate. Finally, the sides of the prothorax in *fulviventris* are more distinctly crenulate, and the striæ on the inner half of the elytra are more irregularly continued, the 2nd and 3rd, as well as the 4th and 5th striæ, being here and there coalescent, dividing their interstices into detached polished portions, thus forming a sort of chain; the space between these two chains is irregularly covered with strong punctures.

In the male sex the two species are easily distinguished by the shape of the apical portion of the anterior tibiæ; in *gemmata* the inner margin of the under surface is thrown up so as to form a compressed keel, which is not the case in the male of *fulviventris*.

Synopsis of the three Japanese species of *Helota* :—

- A. Pronotum rugose, with raised, nearly impunctate, patches. Upper surface dark bronze. Larger species.
  - a. 3rd and 5th elytral interstices continuous, here and there with a large puncture. ♂. Anterior tibiæ with a compressed keel at the end of the inner margin of the under surface. ♀. Apices of elytra acuminate; last ventral segment with a depression at the apex. - - - - - *gemmata*.
  - b. 3rd and 5th elytral interstices divided by the often coalescing bordering striæ into detached ovate portions. ♂. Anterior tibiæ without a compressed keel at the end of the inner margin of the under surface. ♀. Apices of elytra rounded; last ventral segment without depression at the apex. - - - - - *fulviventris*.
- B. Pronotum more finely and evenly punctured, without raised patches. Upper surface bronze-green. Smaller species. - *cereopunctata*.

*Helota gemmata*, Gorh., and *cereopunctata*, Lewis, are known from Japan only; *fulviventris*, Kolbe, moreover, from Korea and Amur (Berlin Museum).

Leyden (Holland), Rapenburg 94. May, 1893.

\* Arch. f. Naturgesch. 1886, p. 182; pl. xi., fig. 25.

† Trans. Ent. Soc. London, 1874, p. 448.

LIFE-HISTORY OF *COLIAS EDUSA*.

BY F. W. FROHAWK, F.E.S.

(Concluded from Entom. xxv. p. 202.)

HAVING previously published the descriptions of the egg and young larva immediately after emergence from the ovum, I will now proceed to describe *C. edusa* through all the remaining stages.

When eight days old, June 19th, 1892, the larva measured  $\frac{1}{3}$  of an inch in length and was of a very pale creamy yellow-green colour. On that day it crawled to another leaflet of clover and spun a little layer of silk on the under surface and thereto fixed itself for moulting for the first time, which took place on the 21st.

The colour after first moult is of a dull smoky or grey-green, the head dusky brown, both head and body being clothed with very short fine hair or pubescence, only visible by the aid of a lens, which also brings into view indications of a lateral whitish stripe and a smoky leaden hue prevailing over the under surface. Its first meal after moulting consists of the cast skin. In feeding on the leaves it now perforates them, whereas, previous to moulting, it fed only on the cuticle, leaving the internal fibres.

On June 29th several larvæ were in their second stage, having only moulted once, but the majority were in the third stage and were almost ready for the third moult.

Before second moult the larva measures  $\frac{1}{2}$  of an inch; colour pale yellowish grey-green; head and body minutely sprinkled with black dots, each emitting a tiny white hair; the segmental divisions are clearly discernible, and each segment is wrinkled transversely; the ground colour of the head is brown; the anal segment is slightly darker than the rest of the body. It rests in a perfectly straight position along the midrib of the leaflet with the head towards the base. After second moult and shortly before the third it is  $\frac{3}{4}$  of an inch long; the body is nearly cylindrical; the colour is of a dull green approaching a smoky or grey-green, produced by the numerous black warts and whitish hairs, which also gives the surface a velvety texture, increased in roughness by the deep transverse wrinkles; a whitish lateral line runs the entire length of the body; the head is pale ochreous-green, sprinkled with black warts and white hairs similar to the body; the under surface is dull green. Just before moulting the colouring becomes paler and assumes a light bluish-green tint.

One larva which hatched on 11th June, moulted the third time on the morning of July 1st, and its fourth moult occurred on the 4th of that month, feeding for only two days, as it fixed for the fourth moult on the morning of the 3rd and changed its skin the following day.

After third moult, when twenty days old, it measures  $\frac{5}{8}$  of an inch in length while resting; the colour is now light green



tinged with bluish, resembling very closely the colour of the upper surface of the clover leaf; the white spiracular line is conspicuous and encloses the spiracles and a yellow spot on each segment. The previous description answers precisely to this stage, excepting the above remarks. It rests with its anterior segments slightly raised in a gentle curve. It has the power of ejecting its excrement to some distance as if by means of a spring. It feeds during the day in sunshine or shade, but prefers the former, and grows rapidly.

After fourth and last moult.—When full grown, on July 10th, twenty-nine days old, it measures  $1\frac{5}{16}$  of an inch long, and is almost cylindrical but slightly attenuated at either end; it is moderately stout, but well proportioned; the segments are clearly defined and transversely wrinkled; the entire surface, including the head, legs and claspers, is profusely sprinkled with extremely minute black warts, each emitting a very fine and short white hair, giving the whole surface a rough and somewhat velvety appearance; it is entirely of a clover-green colour, but varying in depth, being darkest on the dorsal surface and palest on the ventral area, where it approaches a bluish-whitish-green; a very beautiful and conspicuous spiracular stripe adorns the side, which is composed of yellow and bright orange-vermilion streaks alternating, the yellow occupying the anterior half, the red the posterior half of each segment; the spiracles are white and situated immediately in front of the red, the upper edge of the stripe is outlined with white, and directly below the red mark is an intensely rich black spot on each segment, from the third to tenth inclusive; the first two and last two segments are without the black spot.

This larva commenced crawling restlessly about on the following day, the 11th, and early on the morning of the 12th it fixed itself for pupating upon the gauze covering which I had recently placed over the plants to prevent the full-grown larvæ from escaping; at noon the next day it had pupated.

The pupa measures  $\frac{7}{8}$  of an inch in length and  $\frac{1}{4}$  of an inch across its greatest width. Lateral view:—The head terminates in a point slightly upturned, with the dorsal surface compressed; the thorax is swollen and somewhat rounded and very slightly keeled; the body is nearly cylindrical and tapering to the anal segment, which is rather elongated and furnished with hooks; the wing is dilated along the inner margin and considerably swollen about the middle of the costal area.

Dorsal view:—It is broadest across the thorax at the base of the wings; the head is sharply angular and the body gradually attenuated. The colour of the head is dark olive-green above, sharply defined laterally by light greenish yellow and clear green underneath; the whole of the dorsal surface is a clear light green, with a medio-dorsal darker green longitudinal line, and

shading into darker green down the side to the inner margin of the wing; the wing is also a clear green, darkening at the base and of the same colour as the antennæ and legs; the inner margin is dark green and sharply defined by an inner sub-marginal, pale greenish yellow stripe, which blends into the darker colouring of the wing; this light stripe extends down the side of the abdomen, in which are placed the whitish spiracles. There are from three to four small black dots, forming a sub-spiracular series, one on each segment, and below a dark purplish-brown band extending from the wing along the abdomen, which is broken up into four blotches by the segmental divisions; the last one is generally very pale and the smallest; at the end of the discoidal cell is a small black dot, a sub-marginal series of six smaller black dots situated between the nervules, and a few very minute black specks on the thorax. Such is the description when eleven days old. It is attached by the anal hooks to a pad of silk spun upon any suitable object the larva selects for the purpose, and also by a silken belt round the middle. The pupal state occupies about eighteen days.

I had the opportunity of observing a number in the act of pupating, the process generally occupying about twenty minutes, from the splitting of the larval skin down the thorax until the last writhings of the pupa to firmly anchor the hooks into the silk; the actual casting of the skin is accomplished in a few minutes. The entire transformation of *edusa* from larva to pupa is precisely similar to that of *Carterocephalus palæmon*, which I recorded Entom. xxv. p. 255.

The same individual served throughout for the above history. The egg stage occupies about six days; the larval stage about thirty days; and the pupal about eighteen days; such being the average periods for the metamorphoses of the summer emergence.

From the following notes, relating to autumnal-reared specimens, it will be seen that the duration of time embraced by the different stages varies considerably, and is wholly influenced by the conditions of temperature to which they are subjected.

A female captured August 20th, 1892, deposited a few ova the next day; many more deposited on the 24th; several more on the 26th; and she died on the 27th. The first larva hatched out on the 27th; many hatched September 1st. The individual hatched on the 27th began spinning a layer of silk along the midrib of a clover leaflet late on the afternoon of September 1st, and thereon fixed itself that night, preparatory for its first moult, which took place the following day, the slough comprising its first meal.

Second moult on 13th September, again feeding on its cast skin.

Third moult, early morning, 20th September.



Fourth and last moult, 26th September.

Spun up for pupating, 13th October.

A male emerged 16th November, followed by two other males the same day; others emerging on the 21st and 26th, and the last, a female, on the 8th December.

Five females captured 5th September, near Guildford; large specimens. Confined all five on growing plants of clover the next day. The first few ova were deposited on the 13th and the last on the 19th; about 200 in all were deposited by the five. The first lot of ova from each female commenced hatching on the 23rd September, and by the middle of October 170 larvæ were doing well, when a cold, sunless week with frost set in and proved fatal to all. None of them exhibited any intention of hibernating, but all the *C. hyale* larvæ I had feeding at the same time did enter into hibernation. So far as my experience goes with *C. edusa* I am led to believe that it does not hibernate as a larva.

Balham, S.W., February, 1893.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 159.)

*Var. scotica*.—I have adopted this name because I find it has crept into use in catalogues for a Scottish variety, hitherto undescribed. Mr. Robson, it seems, was the first to use it, under the impression that Mr. Birchall had employed it for some Scottish form attempted to be represented in the unsatisfactory figure accompanying that of his *var. hibernica*. It may, therefore, be convenient to attach it definitely to the very distinct variety taken in Aberdeenshire, in which the black ground is intense and extremely predominant, filling the basal area of all the wings up to the fulvous discoidal patch in the fore wing, and the pale central series of the hind wing; the pale discoidal spot of which, however, is usually retained, and sometimes traces of fulvous near the costa. In the outer area of the wings the black invades the coloured patches, obliterating some and reducing the size of the rest. The straw-coloured patches are of a duller tone than those of the preceding variety. The fulvous submarginal band of the fore wing is suffused centrally with yellowish, but that of the hind wing usually retains its normal colour and size. In Mr. Adkin's series, from Aberdeen, there is a male with the straw-coloured patches very large and bright. Expanse: 1 in. 5 lines—1 in. 6 lines ♂; 1 in. 8 lines—1 in. 9 lines ♀. Localities: Cromlyn, and Killynon (*Miss R.*), Co. Westmeath; also at Moycullen, Co. Galway, and Toberdaly, King's Co. Irish examples



usually pass muster as the var. *hibernica*. Mr. Adkin has a characteristic example from Lancashire, along with others of var. *præclara* approximating this form in the dull coloration of the straw-coloured series.

Ab. *hibernica*, Birchall.—“♂. Wings above black. Fore wings ornamented with fulvous patches arranged in a series near the hind margin, and with a number of others in the middle white or whitish straw-coloured, joined at the inner margin, forming a blotch. The hind wings with a broad fulvous fascia along the hind margin (the fulvous marks on the narrow black outer margin of examples of the type being indistinct or obsolete in the variety); beneath pale fulvous, with similar but indistinct pattern. ♀. Fore wings fulvous, marked with a double row of white or pale straw-coloured patches, sometimes confluent and forming fasciæ, with the outer band carried on across the hind wings. Hind wings as in typical forms, but ornamented neither with pale straw-coloured nor fulvous patches. Expanse of wings: ♂, 1 in. 4 lines—1 in. 8 lines; ♀, 2 in.—2 in. 3 lines. Larva not distinguishable from that of the English form of *Artemis*. Habitat: the central bogs of Ireland.”\* The selected specimens from which the above description was taken were sent to Mr. Birchall by Mrs. Battersby, Cromlyn, Rathowen, Westmeath. It has been commonly supposed, owing to a misconception of his prefatory remarks, that Mr. Birchall's var. *hibernica* is the ordinary Irish form, but this is far from being the case. Only a small proportion of the Cromlyn insects (var. *scotica*) present the extreme characters above given. I have, by the kindness of the captress, eight specimens, of which only one nearly accords with the definition, falling short however in size. I have also seen Mrs. Battersby's collection, and though all are more or less distinguished by the predominance of the black ground and the pallor of the straw-coloured markings, yet they vary very considerably *inter se*, many being simply dark examples of the var. *scotica*, and none approach the size mentioned above, the largest female measuring 1 in. 10½ lines. I have not seen the true ab. *hibernica* from any other locality. It seems necessary here to refer to Mr. Birchall's prefatory remarks, in which he lays great stress on the distinction between the Irish and Scotch forms of *M. aurinia*, the latter corresponding, he considers, to the var. *merope* of Duponchel. I am reluctantly compelled to differ wholly from my late friend's conclusion, and can only suppose that he was not well acquainted with the alpine variety in question. I much regret that the publication of these carelessly written comments on this remarkably aberrant form has led to so much confusion and misapprehension, Mr. Dale and other writers having been led astray in their references to the Scottish

\* Translated from the original Latin description given in Ent. M. M. vol. x.

and Irish forms of *M. aurinia* in regard to size and characteristics. I am under the impression that Mr. Birchall's experience of the Irish insect was but limited, as the Wicklow locality given in his list was supplied by Mr. Bristow, and the Westmeath specimens were taken by Mrs. Battersby.

Other aberrations:—*α*. The double series of straw-coloured blotches on the costal half of the central band of fore wing occasionally become confluent (which is one of the characters given of the ab. *hibernica*), forming a series of parallel streaks, and sometimes also the two quadrate ones on the central portion of the inner margin are fused. This occurs in specimens of most of the varieties. Mr. Tutt has many from Carlisle, and some from Scotland; also Lancashire examples; and I have many from Irish localities. *β*. On the hind wing a similar character occasionally, but rarely, appears; the straw-coloured patches becoming linear. Tramore and Toberdaly.

MELITÆA ATHALIA, *Rott.*—"Killarney, abundant" (*B.*).

VANESSA URTICÆ, *L.*—Everywhere common.

VANESSA IO, *L.*—Common in many parts of the South. I have seen it plentiful at Glengarriff, Killarney, near Cork, on the Saltee Island off the Wexford coast, New Ross (*B.-H.*), and elsewhere in Munster. In Connaught also, in the Co. Galway, Moycullen, &c. Occasionally in the Co. Wicklow (Ashford); rarely in Co. Dublin, as at Killiney and Howth; but of late years it has not been seen. Occasional specimens have been noticed in Ulster, as at Knockbreda, one (*Bw.*); Lisburn, one (*J. Stears*); one also at Derry and at Greencastle (*W. E. H.*). Rare at Drumreask, Co. Monaghan, at Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*), Co. Westmeath; and Enniskillen. I observed this species flying on the barren shore of Bere Island, at the mouth of Bantry Bay.

VANESSA ANTIOPA, *L.*—I have a specimen much worn, taken July 21st, 1865, by the late W. G. Battersby, M.D., near Caragh L., Co. Kerry. One is in the Rev. James Bristow's cabinet, taken near Belfast (*Ent. viii. 220*). One was seen, many years ago, near Trillick, Co. Tyrone, by my friend the Rev. S. L. Brakey, whose entomological training renders the record reliable, settled on the roadside, but not captured, it being Sunday. I have no recent records.

VANESSA ATALANTA, *L.*—In Leinster and Munster usually very common, as well as in many parts of Connaught. In Ulster, however, its appearance is capricious, depending apparently on climatic variations. At Drumreask, Co. Monaghan, I have in warm seasons seen it flying in great numbers at the end of summer; also near Derry (*W. E. H.*); but usually it cannot be said to be plentiful in the North. Mr. Watts has seen



it abundant on Collin Mt., Antrim. A very fine variety was taken by Mrs. Battersby, of Cromlyn, Westmeath, of abnormal pattern so closely resembling the one from Jersey, lately figured (Entom. xxvi. 27) by Mr. South, that it raises most interesting conjectures in relation to the origin of such similar variations arising sporadically in localities so widely separated in a species noted for the stability of its characters. Similar causes produce similar effects. And if we refer to a former volume (Pl. II. of vol. xi.), we find that the Westmeath aberration partakes also, in addition, of some of the characters of that figured from the neighbourhood of Birmingham, namely, in the trace on the costa of the obsolete band of the fore wing, and more especially on the under side of fore wing in possessing the identical bluish patch near the apex, and in the width of the suffusion of the red band (yellowish in the Birmingham example). It thus combines all the remarkable features of both (except the reversion to a yellowish tint in the red band of the latter), and differs from them chiefly by the suppression of the ocelli, and in having a suffused submarginal grey band running along all margins.

VANESSA CARDUI, L.—The same remarks apply to this species, but perhaps it is even more fickle in occurrence, especially in Ulster. Mr. Campbell, however, has seen specimens of it every season near Derry. In the southern half of Ireland and in Galway it is occasionally very plentiful, at Killarney, Cork, Wexford, and Dublin. Mr. Birchall notes that it is often to be found on the summits of mountains. Its wandering propensities are well known, and I have seen it frequently above the snow-line of the Swiss Alps. It seems pretty certain that our indigenous race of both *atalanta* and *cardui* are occasionally reinforced by migrations. In Spain, whose arid plateaux are often covered with dense growths of thistle, this species swarms locally; and it is probable that from time to time, through defoliation, migrations to new pastures become a necessity. Hence, probably, vast flights of the insect occur wherever similar circumstances arise, and the habit has been derived.

[*Apatura iris* has not been, as yet, certainly taken in Ireland; but a few specimens are said to have been taken at Rathmullen, Co. Donegal, an unlikely occurrence so far north, by Mr. John Cowie. Also I heard a rumour of its existence at Charleville Forest, Tullamore. If the climate is sufficiently favourable for its survival, the vast oak forests, which anciently covered great tracts of Ireland, may well have harboured this fine species.]

(To be continued.)

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## A FORTNIGHT'S COLLECTING AT BUDAPEST.

BY W. E. NICHOLSON.

IN the early part of last summer, in company with my friend Mr. F. C. Lemann, I spent a fortnight at Budapest, during which time we did a little collecting among the butterflies of the neighbourhood; and although our results were not remarkable from a collecting point of view, yet I have thought that a few notes on the district might possibly be of some interest.

After a very pleasant journey down the Danube from Passau on the Austrian frontier, steaming under many a ruined castle, as on the Rhine, still crowning some precipitous rock, we arrived in Vienna on the 5th June, where we spent a couple of days in seeing the city. Among other places we visited the New Natural History Museum on the Ringstrasse, where we met with great courtesy from Herr Rogenhofer, the curator of the entomological section, who showed us over the collections. Especially noteworthy were the number of well-preserved life-histories of lepidopterous insects, the larvæ in various stages and the pupæ being mounted on dried specimens of the food-plant.

We left Vienna on the afternoon of the 7th June, arriving at Budapest the same evening, where I remained until the 21st, Mr. Lemann staying for a few days longer. The day after our arrival we spent in seeing the sights of the city, which was in full gala on account of the festivities in connection with the Emperor's Jubilee. We also called on Herr Pavel, an entomologist attached to the Museum, to whom Herr Rogenhofer had given us an introduction, and who afterwards proved very useful in guiding us to the good localities.

The neighbourhood of Budapest, at first sight, does not look a very promising field for a collector. The country on the left bank of the Danube, where the more modern town of Pest is built, is exceedingly flat, the great central plain of Hungary, so productive of corn, stretching away as far as the eye can reach to the north and east, the Carpathians being only visible on the horizon on a very clear day, half hidden in a blue haze of distance. On the right bank of the river, however, the country is more varied. The old town of Buda, or Ofen as it is called by the Germans, is principally built against a ridge of hill which is crowned by the king's palace; while still further to the west is a series of low mountains, beautifully wooded in most places. It was consequently to this side of the river that our collecting expeditions were principally directed.

The climate of Budapest, as the papers have recently testified, is of the extreme Continental type, and the temperature, even in the summer, is liable to considerable variation. When we first arrived we found it too cold to be pleasant, when waiting in the

streets to see the Emperor; while a few days later it was so intensely hot that vigorous collecting was impracticable, not to say dangerous. This of course is not without its effect upon the vegetation, and the principal thing that strikes a stranger is the absence of the various evergreens, that do so well in our country, from the public gardens and squares.

Herr von Harmuzaki, writing on the Lepidoptera of Czernowitz in Bucovina, in an interesting paper contributed to the 'Entomologische Nachrichten' for October and November, 1892, and which Mr. Lemann has brought to my notice, draws attention to the fact that the difference between the fauna of that district and that of Western Europe is apparent not so much in the occurrence of species which are unknown in the west, as in the very different degrees of abundance in which species inhabiting both districts occur in each; those which are abundant there occurring but rarely in the west, and *vice versâ*. The same remark applies somewhat to the fauna near Budapest. For instance, we found *Thecla pruni*, *T. acaciæ*, *Lycæna iolas*, and *Argynnis hecate*, all of which are more or less local in Western Europe, in considerable abundance and not confined to isolated spots. On the other hand, *Colias edusa*, so abundant last year in England, and *C. hyale*, were decidedly scarce, although perhaps we were too early for the later broods.

Our best localities for collecting were the Blocksberg; a hill to the south of Buda, surmounted by a fortress; a wood near the village of Promontor; and a mountain known as the Schwabenberg,—all on the right bank of the Danube.

The Blocksberg is a roundish mass of rock, covered with a scrubby vegetation on its southern and western slopes, where the bladder senna, *Colutea arborescens*, and the straggling *Lycium barbarum* grow freely. On the sides of the hills rising immediately behind the Blocksberg, one of which is known as the Adlersberg, were several vineyards, which had been devastated by the *Phylloxera* and left uncultivated for years, but which were very good for collecting. These deserted vineyards, a sight only too common in Hungary, were often very picturesque in their decay, the dead vine-stocks being in many cases covered with luxuriant wreaths of the brilliant *Orobis tuberosus*, while the handsome *Linosyris vulgaris* and the more delicate *Delphinium ajacis* were not behind in hiding the ruin. The food-plant of *Thaïs polyxena*, *Aristolochia clematidis*, also grew in considerable abundance in these vineyards.

The village of Promontor—or, in the Magyar, Budafok—is situate about five or six miles below Budapest, and is best reached by steamer, a very good boat leaving the quay at Pest at nine a.m. We found a wood on some rising ground at the back of the village the best locality in the neighbourhood for the various species of *Thecla*, no less than six species occurring

there. An amusing episode occurred on the occasion of our first visit there with Herr Pavel. A specimen of *Sirex gigas* having caused considerable consternation to the passengers on the steamer, who were under the impression that it was some exaggerated species of hornet, aroused the attention of Herr Pavel, who quieted the alarm by seizing the harmless sawfly and transferring it to his chloroform-bottle, greatly to the satisfaction of the other passengers.

The Schwabenberg locality is about 1500 feet above Budapest, and can be reached by a cog-wheeled railway from Buda. This was the most picturesque spot that we visited for collecting, the view from the higher ground being magnificent. The broad meadows, fringed with wood, which sloped away gradually from the summit towards the Wolfsthal on the east, were a favourite resort of *Argynnis hecate*, together with some of the larger species of *Argynnis*, among which the handsome *A. pandora* was said to occur later on.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 125.)

### EREBIDÆ.

#### LETIS, *Hübner*.

##### *Letis alauda*.

*Letis alauda*, Guenée, Noct. iii. p. 154, n. 1543 (1852).

*L. scopis*, Guenée, *l. c.*, p. 155, n. 1544 (1852).

*L. trailii*, Butler, Trans. Ent. Soc. p. 49, n. 82 (1879).

Brazil, Amazons. In Coll. B. M.

##### *Letis hercyna*.

*Phalæna hercyna*, Drury, Ill. Eur. Ent. ii. p. 41, pl. 24, figs. 1, 2 (1773).

*Letis buteo*, Guenée, Noct. iii. p. 152, n. 1540 (1852).

*L. xyliæ*, Guenée, *l. c.*, p. 153, n. 1541 (1852).

*Syrnia letiformis*, Guenée, *l. c.*, p. 158, n. 1549 (1852).

*Letis vittifera*, Walker, Lep. Het. xiv. p. 1273, n. 23 (1857).

*L. integra*, Walker, *l. c.*, n. 24 (1857).

Jamaica, Venezuela, Trinidad, Demerara. In Coll. B. M.

This species is extremely variable on the upper surface, but the under surface of the wings varies very little.



*Letis occidua.*

*Phalæna occidua*, Linneus, Syst. Nat. p. 812, n. 14.

*P. marmorides*, Cramer, Pap. Exot. i. p. 25, pl. xvi. figs. E, F (1779).

*P. corisandra*, Cramer, l. c., iv. p. 189, pl. cccclxxxiv. figs. A, B (1782).

♂, ♀. Amazons. In Coll. B. M.

*Letis magna.*

*Phalæna magna*, Gmelin, Syst. Nat. p. 2544, n. 1448 (1789).

*Letis fusa*, Guenée, Noct. iii. p. 151, n. 1537 (1852).

*L. aptissima*, Walker, Lep. Het. xiv. p. 1272, n. 21 (1857).

*L. abrupta*, Walker, l. c., n. 22 (1857).

Trinidad, Venezuela, Amazons. In Coll. B. M.

This species is nearly allied to the following, which, however, is less grey in colouring, and differs somewhat in the pattern of the under surface.

*Letis mycerina.*

♀ *Phalæna mycerina*, Cramer, Pap. Exot. ii. p. 115, pl. clxxii. fig. B.

*Letis nycteis*, Guenée, Noct. iii. p. 150, n. 1536 (1852).

*L. atricolor*, Guenée, l. c., p. 151, n. 1538 (1852).

Pará and St. Domingo. In Coll. B. M.

Walker wrongly identified Guenée's species, the true *L. atricolor* being evidently Walker's *L. nycteis*, plus one or two specimens inseparable from his *L. mycerina*. The female figured by Cramer has the upper surface of the var. *atricolor*, and the under surface of Walker's *L. nycteis*, ♀. The *L. atricolor* of Guenée represents the darkest and most uniform type of the species; and *L. nycteis* the form with the costal half and external border of the primaries paler, or (as Guenée expresses it) "ailes d'un brun-fauve," "ligne coudée . . . suivie d'une large bande d'un brun foncé que borde la subterminale"; or possibly his specimens were intermediate between Walker's *L. atricolor* and his own.

## EREBUS, Latr.

*Erebus odoratus.*

*Phalæna odorata*, Linneus, Syst. Nat. 10th ed. p. 505, n. 43 (1757).

*P. odora* (part), Linneus, Mus. Lud. Ulr. p. 374, n. 9 (1764). Jamaica. In Coll. B. M.

In his original diagnosis, Linneus named the insect *P. odorata*, and quoted Sloan's Jamaica only for a figure of his species. The Jamaica form, therefore, characterized by the bright purple shot of its upper surface and the red legs below, becomes typical *Erebus odoratus*; and the form described in full in the Museum

Ludovicæ Ulricæ, and characterized by the words "*Alæ supra omnes simul griseæ, fusco-nebulosæ*," represents the common American type, figured by Cramer (Pap. Exot. ii. pl. clxix. A, B), as *Phalæna odora* and (pl. clxx. A, B) as *P. agarista*; the latter name will stand.

RAMPHIA, Guen.

*Ramphia albizona*.

♀ *Noctua (Erebus) albizona*, Latreille in Humb. et Bonpl.

Rev. ii. p. 136, n. 160, pl. 43, figs. 5, 6.

♂ Var. *Ramphia evinga*, Guenée, Noct. iii. p. 143, n. 1527.

*Brujas basicincta*, Walker, Lep. Het. xiv. p. 1251, n. 3.

♀ *Ramphia amarygma*, Guenée, Noct. iii. p. 144, n. 1529.

Theresopolis, Pará, Venezuela, Yucatan. In Coll. B. M.

TAVIA, Walk.

*Tavia nycterina*.

*Polydesma nycterina*, Boisduval, Faune Ent. de Madag. p. 109, n. 2, pl. 13, fig. 6.

*Tavia instruens*, Walker, Lep. Het. xiv. p. 1275, n. 1 (1857).

Madagascar and Congo. In Coll. B. M.

M. Guenée must have wrongly identified Boisduval's species, or he could never have allowed this species to remain in *Polydesma*; the enormous development of the third joint of the palpi and the form of the primaries at once distinguish it from all the Polydesmidæ.

SYPNA, Guen.

This genus is closely allied to the preceding.

*Sypna rubrifascia*.

*Sypna rubrifascia*, Moore, Proc. Zool. Soc. 1883, p. 24.

*S. fraterna*, Moore, l. c., p. 25.

Sikkim. Type in Coll. B. M.

(To be continued.)

## CAPTURES AND FIELD REPORTS.

### SPRING LEPIDOPTERA:—

*Cambridgeshire*.—I captured a nice specimen of *Euchelia jacobææ* on the wing, near Cambridge, on the 16th April; and my brother took another on the 23rd. I took *Demas coryli* from a beech trunk on the 25th; and also *Lithosia aureola*. *Arctia menthastris* was out still earlier; I found a freshly-emerged specimen on the 14th.—MAURICE WHITE; Jesus College, Cambridge, April 26, 1893.

*Carmarthenshire*.—The following notes, taken during March and April in this district, may be of value for comparison with others. The weather throughout has been so exceptionally fine, and also warm at times, that of course the season must be considered an early one for insects. During

March circumstances prevented my working the sallows, so that I could not properly observe the *Tæniocampæ*. Sugaring for them proved a complete failure in a garden surrounded by open fields, and often found productive in the summer months. The following are the species seen, and dates of their appearance:—March 8th, *Tæniocampa gothica*, *Anticlea badiata* (at blossoms of willow branches placed in garden), *Vanessa urticae*; 10th, *Xylocampa areola*; 13th, *Cerastis spadicea* (at willow); 15th, *Anisopteryx æscularia*; 21st, *Selenia illunaria*; 23rd, *Hybernina marginaria*; 24th, *Tæniocampa stabilis* (one specimen at sugar); 30th, *Cidaria suffumata*. From the 13th to the end of the month the nights were generally bright, clear and frosty. April 1st, *T. stabilis*; 2nd, *Pieris rapæ*; 4th, *Hybernina marginaria*, *Vanessa urticae* (commonly); 9th, *Euchloë cardamines* (male and female); 13th, *Anisopteryx æscularia* and *Anticlea badiata*; 14th, *Pararge aegeria*, *Anticlea derivata*, *Tæniocampa populeti* (one specimen at rest), *Dicranura vinula* (male), *Pieris napi*; 17th, *Eupithecia pumilata*; 18th, *Pieris brassicæ*; 20th, *Pararge megæra*, *Rumia luteolata* (*cratægata*), *Euchelia jacobææ*; 21st, *Hemerophila abruptaria*; 22nd, *Gonoptera libatrix* (at sugar), *Vanessa io*, *Coremia designata*, *Eupithecia coronata*, *Eurrhynx urticata*, *Euchloë cardamines* (very abundant at this time); 29th, *Spilosoma mendica* (female, flying in sunshine), *Acidalia remutaria*. From a relative in Pembrokeshire I hear *Lycana argiolus* was seen on Easter Monday; *Argynnis euphrosyne* the following week; *Nisoniades tages* and *Syrichthus malvæ* were common on April 22nd.—T. B. JEFFERYS; Langharne, Carmarthenshire, May 4. 1893.

*Chester and North Wales*.—A most extraordinary, early season. A fine, dry March, and a spell of fifteen warm, rainless days in April; a couple of "dropping" days on the 16th and 17th, followed by dry, and positively hot, weather up to date. The willow catkins were almost over before the *Tæniocampæ* appeared. I saw only one representative of the family (*T. gothica*) on some catkins in the neighbourhood, late ones, March 23rd. On visiting these sallows again, April 5th, I found them entirely out of bloom; and so ended my willow season for 1893. Released from catkin attractions, the early moths, I suppose, had time to investigate the mysteries of gas-lamps. At any rate, I took *Tæniocampæ*, for the first time in many years, at the Chester lamps; but very sparingly. On March 21st, I secured a *T. gothica*; April 7th, a reddish form of *T. instabilis*, and a typical specimen on the 18th; April 19th, one *T. stabilis*; and on about the 19th, I got from the lamps three examples of a moth I have never before taken in the district, *T. populeti*. Mr. A. O. Walker records it in his list for the "Wirral, scarce, but generally distributed." Such is my season's record for the *Tæniocampæ*—all told. *Diurina fagella*, *Hybernina marginaria* (*progemma*), and *Anticlea badiata* replaced *H. defoliaria* at the lamps about the middle of February, and were joined at the end of the month by *Anisopteryx æscularia*. On March 21st and April 13th, I had the good fortune to take a specimen of the dark smoky unicolorous variety (*fusca*) of *H. marginaria*. A remarkable, median variety of this species I bred, February 19th, from Delamere Forest larvæ. On the upper wings in this specimen the area between the bent transverse line and the outer margin is filled up with the smoky colour; otherwise, the insect, with the exception of the lower wings being a little darker, is a typical one. On April 18th, two small specimens, but very beautiful and with dark markings, of *Melanippe fluctuata*; two *Eupitheciæ*, which I have not yet determined, as they are on the setting-board; and another species I have



never taken before in the district, *Hemerophila abruptaria*. Of this insect, Mr. A. O. Walker writes:—"Upton; Tranmere; Rock Ferry; Ness; scarce. Chester (*Manning*)."

On April 20th, I took a *Selenia bilunaria* (*illunaria*); but I had seen the species a week ago. Such are my gas-lamp notes; and they close, for the present, with the 21st, when a crescent moon frightened away all the moths, except a roving Geometer, which escaped capture, and a dilapidated *D. fagella*. Butterflies have been early, and in promising numbers. In North Wales (Denbighshire), April 3rd, I saw my first, a fine female *Vanessa io*; of course it was not disturbed. On April 6th, a friend in Montgomeryshire sent me four living (hybernated) *V. c-album* from Welshpool, two males and two females; but I failed to get eggs. On April 10th, I saw my first white butterfly, a male *Pieris rapæ*. On the 15th, when I saw the first swallow, and with the lilacs and apple trees all in bloom, I came across a freshly-emerged male *P. napi*. Other local entomologists report specimens of *P. rapæ*, seen in the district on April 3rd; and *V. urticae* as early as March 27th. On April 17th, a living specimen of *Caradrina quadripunctata* (*cubicularis*) was sent me by Mr. J. Lyon Denson, of Chester. To-day, April 22nd, we had *P. brassicae* (males) flying about in the Chester streets. An expedition this afternoon for two or three miles into Sealand, just beyond the city, was enlivened by the martial strains of the first corncrake. The following butterflies were either captured or distinctly seen:—*P. napi*, plentiful, all males, netted six; of these six, two had the black spot on the upper wings very distinctly marked, two had it indistinctly, and the remaining couple were without it. Several *P. brassicae* were seen, all males. *P. rapæ*, a few observed; no females. *Euchloë cardamines*, one splendid male example, with very large "orange tips"; nearly captured. Trees in blossom: hawthorn, laburnum, and horse-chestnut. Night: starry, bright moonlight; not a cloud, and—not a moth! My first hybernated larva turned up, out of doors, in a hedge root, outside Chester, March 12th; a Geometer, and now in the chrysalis; species uncertain. Larvæ of *Arctia caia* seem exceptionally numerous; the first I saw was on March 25th. April 3rd, I took, in the valley of the Alwyn, North Wales (Denbighshire), a larva of *Agrotis ashworthii*.—J. ARKLE; Chester, April 22, 1893.

*Cumberland*.—Insects at Keswick are exceptionally early this spring. I took eight *Thecla rubi* on April 26th, some of them quite worn; and since then about seventy more good specimens and a number of worn ones, which were set at liberty again. On April 24th, I picked off the lake a dead *Noto-donta trepida*, and most other things are equally early. My latest capture, April 7th, is *N. dromedarius*, for which Newman gives June. I think the present season bids fair to eclipse the last, as larvæ are very abundant wherever I have collected.—H. A. BEADLE; 28, Lake Road, Keswick.

*Essex*.—On May 6th, I captured a rather worn *Vanessa polychloros*, at a spot about half a mile east of the Ambresburg Banks, Epping Forest. Of the other Rhopalocera in that neighbourhood, a few *Euchloë cardamines*, *Lycæna icarus*, and *L. argiolus* were taken; *Argynnis euphrosyne*, *Thanaos tages*, and the "whites" may be said to be fairly common; whilst *Syrichthus malvæ* was abundant. It may be interesting to note that as early as April 14th I took both *E. cardamines* and *S. malvæ* at Long Running, also in Epping Forest; and on the 21st, *L. argiolus* at Woodford.—H. F. HUNT; 14, Thistlewaite Road, Clapton, N.E., May 11, 1893.

*Sussex and Isle of Wight*.—*Lycæna icarus* appeared in W. Sussex this year on April 29th, and *Sphinx ligustri* emerged May 1st, *Hepialus lupu-*

*linus* was on the wing on May 7th, and on the same date *Pacilocampa populi* pupated; *Pericallia syringaria* and *Geometra papilionaria* had both entered the pupa state on or before May 1st. At Ventnor *Hesperia sylvanus* occurred on May 11th. *Arctia villica* was noted on May 11th. Pupæ of *Vanessa urticae* were seen on May 8th in W. Sussex, and an imago taken at Ventnor on the 11th was so fresh that it appeared to have just emerged; *Colias edusa* was captured at same time and place, and several others were seen. Ova of *Dicranura vinula* were noticed in W. Sussex on the 10th May.—W. M. CHRISTY; Watergate, Emsworth, Hants, May 13, 1893.

*Herefordshire, &c.*—On April 14th, I first saw *Syrichthus malvæ*, *Euchloë cardamines*, and *Nisoniades tages*; the next day I saw *Polyommatus phlæas* taken by a friend. On April 19th we went to Moreton Jeffreys, a village of three houses, eight miles from Hereford. On the 20th, I took *Leucophasia sinapis*, *Argynnis euphrosyne*, and *Pararge egeria* in Moreton Wood; I saw *Lycæna argiolus* in the garden, where it seemed to have its head-quarters round a row of hollies; it was very common in the neighbourhood. On the 21st, I took *Pieris napi* and *Pararge megæra*. On the 22nd, I saw a *Vanessa atalanta* in the garden, flying about some clematis, at 10.15 a.m. The next day I caught *Cænonympha pamphilus* in the wood, and *Vanessa c-album* in the garden. On May 3rd, I missed a *Vanessa c-album* near the hop-yards, but the next day I caught one; the brown on the under side was a uniform dull colour. The same day I caught two female *Euchloë cardamines*, only 1½ inches from tip to tip. On May 5th, we went to Colwall near Malvern, and the same morning I got a fine *Vanessa c-album* in my net, but it escaped through a hole. However, in the afternoon, I caught one with a beautifully mottled under side. It is rather odd that the lane where the last two specimens were flying was a long way from any hop-yards. In all three specimens the green spots are not at all conspicuous. On the afternoon of May 5th, I caught a *Thecla rubi*.—D. P. TURNER; 14, Havelock Road, Tonbridge, May 10, 1893.

*Kent.*—*Colias edusa* has put in an early appearance here this year. I saw several on the wing yesterday under the cliffs near Dover; and I am informed that specimens were seen flying along the cliffs a week ago. Those that I saw were all males, and in such good condition that they might have emerged from the chrysalis this season. I have taken several species unusually early this year, among which I may mention *Scoparia angustea* and *Eupæcilia atricapitana*.—W. PURDEY; 129, Sea View Terrace, Folkestone, April 24, 1893.

Having been staying at Forest Row this spring, I send you a few notes. All insects on the Forest have been out over a month earlier this season. On April 20th, *Hesperia malvæ*, *Argynnis euphrosyne*, *Anthocharis cardamines*, *Cænonympha pamphilus*, *Polyommatus phlæas*, were in abundance. On April 26th, *Lycæna argiolus* was flying round the holly bloom, and *Bombyx rubi* and *Saturnia carpini* flying over the heather, usually between 4 and 5 p.m. I tried sugar once, but only found *Gonoptera libatrix*. At light I took *Hypsipetes ruberata*, *Cilix spinula*, *Rumia crataegata*, *Spilosoma menthastri*, *Numeria pulveraria*, *Habrostola urticae*, *Melanippe montanata*, *Panagra petraria*, *Iodis lactearia*, *Cabera exanthemaria*, *Lomaspilis marginata*. I have noticed the very great abundance of larvæ this spring. All the rides in the Broadstone Warren were almost black with the "frass" from the larvæ feeding in the trees above.—R. A. DALLAS BEECHING; Tunbridge Wells, May 15, 1893.



**Lancashire.**—During a stay at Blackpool I captured the following :—*Pieris rapæ*, *P. napi*, *Polyommatus phlæas*, *Vanessa urticæ*, several in fair condition. *Nyssia zonaria*, abundant on April 22nd; *Rumia cratægata*, on 28th. *Melanippe montanata* and *M. fluctuata*, on May 5th; *Anticlea badiata* and *Hypsipetes impluviata* were captured by my brother on May 1st; *Plusia gamma*, one on the sand-hills on May 6th. *Euchelia jacobææ*, very common on the sand-hills, and in very good condition, on April 25th. *Arctia menthastri*, two freshly emerged, on May 3rd. Since I have come home, my brother has taken *Mamestra brassicæ* on May 9th; and I took *Hadena oleracea*, at sugar, on the 8th.—S. STONES; Northwood, Seymour Grove, Old Trafford, near Manchester, May 10, 1893.

**Monmouthshire.**—On April 25th, *Argynnis euphrosyne* was common in open spots at Wentwood; I picked up a freshly-emerged specimen of *Melitæa aurinia (artemis)*, and saw another on the wing on April 30th. May 8th, I took *A. selene* with *A. euphrosyne*, *Thecla rubi*, and worn examples of *Lycæna argiolus*, at the foot of the Twm Barlwyn mountain.—J. E. KNIGHTS; 3, Mount Joy Street, Newport, Mon.

**Radnorshire.**—Several species have put in an extremely early appearance in the Wye Valley. In an average year, I notice the dates given in Newman are, as a rule, quite a month or three weeks too early for this neighbourhood, which is a late one; but this season I have already taken *Arctia menthastri*, *Eupithecia vulgata*, *Cidaria immanata* [? *truncata* (russata), Ed.], *Coremia propugnata*, *Melanippe fluctuata*, and *Anaitis plagiata*. And among the butterflies, I took, on April 22nd, *Nisoniades tages* and *Lycæna argiolus*. But the great feature of the season, so far, has been the extreme abundance of *Argynnis euphrosyne*. Generally speaking, this insect is by no means common in this neighbourhood, although it appears sparingly in the woods every season. This season, however, it fairly swarms in the gardens, road-sides, and everywhere. I noticed the first two on April 12th, since which time I could have taken hundreds if I had wanted them. They seem all to be in the most perfect condition, and look as if they had just emerged from the chrysalis.—J. W. VAUGHAN, Jun.; The Skreen, Erwood, R.S.O., Radnorshire.

**Surrey.**—I noticed, during the second and third weeks in April, a very considerable number of insects due at least a month hence. The following is a list of those I have observed more especially:—April 14th, two *Argynnis euphrosyne*; 15th, *Pieris brassicæ* (quite fresh); 16th, *Euchloë cardamines*; 17th, three skippers all together, viz., *Syrichthus malvæ*, *Nisoniades tages*, *Hesperia sylvanus*; 18th, *Thecla rubi*, in more or less abundance, among which were to be seen a few *Strenia clathrata*; 19th, *E. cardamines*, abundant; and in the evening I netted numbers of *Coremia unidentaria* and *C. ferrugata*, and might have been equally well employed in catching *Rumia cratægata*, had I been so disposed. I do not know if it is a recognised fact, or a suggestion of my own, but it struck me very forcibly the other day on seeing *Syrichthus malvæ* and *Strenia clathrata* together on the railway bank, that the one mimicked the other; I mean *clathrata* mimicked *malvæ*. If anyone could give any information as to this, I should be very glad.—W. J. KAYE; The Court, Worcester Park, Surrey, April 20, 1893.

As evidence of the extreme forwardness of the season, the following list of butterflies, taken by me at Woking this morning, may interest your readers:—*Pieris brassicæ* (common), *P. rapæ* (common), *P. napi* (common), *Euchloë cardamines* (two), *Pararge megera* (several), *Cænonympha pam-*



*philus* (several), *Vanessa io* (several), *V. atalanta* (several), *V. urticae* (several), *V. polychloros* (one), *Argynnis euphrosyne* (plentiful), *Lycæna argiolus* (nine), *Polyommatus phlæas* (plentiful), *Syrichthus malvæ* (plentiful), *Nisoniades tages* (plentiful). Fifteen species. A specimen of *S. malvæ* that I took turned out to be a very nice variety, the upper wings being suffused with white.—S. G. C. RUSSELL; Priory Villa, Woking, April 23, 1893.

MELITÆA CINXIA ABUNDANT IN SARK.—It is with much pleasure I beg to record the capture of *Melitæa cinxia* in Sark. Almost the first thing I saw on landing was one of these beautiful insects, and my surprise and delight on finding that the whole hill-side was covered with them may be better imagined than described. There were thousands flying gaily about from flower to flower, especially those of the wild rose and kidney vetch. The butterflies were by no means confined to that one hill, but were more or less rarer right through the island, a distance of about two miles. They were fairly numerous in Little Sark, a peninsula on the other side of the island, rather less than a mile in extent; but nowhere were they to be seen in such numbers as on the first hill, opposite the landing-place.—STANLEY GUITON; 31, Bath Street, Jersey, April 27, 1893.

NYSSIA ZONARIA IN LANCASHIRE.—When I was at Blackpool, *Nyssia zonaria* was discovered by my friend Wilfrid Stones, of Northwood, Seymour Grove, Old Trafford, with whom I was staying. L. Stones and myself took over ninety males and sixty females, and also left many more. The date of the discovery was April 22nd, and I think this is the first record from Lancashire. The moths were taken on the cliffs, at the point where they begin to get lower and covered with grass, seated on the tall coarse grass which grows on all sand-hills. Many ova were obtained, larvæ from which have emerged to-day. *E. jacobææ* was also taken plentifully on the sand-hills, and a specimen of *Anticlea badiata*.—S. RENSHAW; Ash House, Stretford, Manchester, May 14, 1893.

NYSSIA HISPIDARIA AND ACRONYCTA LEPORINA IN HERTS.—Two specimens of the first-named insect were taken by myself and Mr. E. Wigg on February 19th, and four on March 5th, in Cassiobury Park on the oaks. On July 6th, 1892, we took twelve larvæ of *A. leporina* on the birch trees. Only two of the larvæ pupated; all the others died off rather suddenly. The first specimen emerged on April 29th, it having been kept in a temperature the maximum of which was 65° and the minimum 40°, Fahr.—S. H. SPENCER, JUN.; Watford, Herts.

COLIAS HYALE REPORTED FROM BERKS.—I have just seen a specimen of *Colias hyale*, which was taken here by a lad on May 7th. It was in rather bad condition, and had the appearance of having hybernated.—A. H. HAMM; 24, Hatherley Road, Reading.

YELLOW VARIETY OF ZYGÆNA TRIFOLII.—There are now large numbers of *Zygæna trifolii* flying in a locality in W. Sussex, where I do not remember to have seen the species in previous years. The form with confluent spots is common, and I have taken several specimens with deformed wings, and two examples which are destitute of wings. On the 18th, I secured fourteen specimens with the spots and hind wings yellow. [Our correspondent has very kindly sent us a living example of this form.—ED.] The cocoons are hidden down among the tufts and tussocks of grass.—W. M. CHRISTY; Watergate, Emsworth, Hants, May 20, 1893.

DEILEPHILA LIVORNICA AT CHRISTCHURCH.—On May 20th I had the pleasure of taking on the wing an example of *Deilephila livornica* on my premises at Christchurch. The specimen is in good condition. It was seen alive by my brother, and identification confirmed by Mr. R. E. Brameld, of this place. Can any reader give the records of the capture of this insect for the last ten years or so?—JOHN H. ASHFORD; Christchurch.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — May 10th, 1893. — Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. A. Cowper Field, of 81, Wiltshire Road, Brixton, S.W., was elected a Fellow of the Society. Mr. McLachlan exhibited, for Dr. Fritz Müller, of Blumenau, Santa Catarina, Brazil, specimens of larvæ and pupæ of a dipterous insect, *Paltostoma torrentium*, and read a letter from Dr. Fritz Müller on the subject. The writer stated that these larvæ were of the same nature as those exhibited by Mr. Gahan, at a meeting of the Society in October, 1890, and which were then thought by Lord Walsingham and Mr. McLachlan to be allied to the Myriapoda. Mr. Gahan, Mr. Jenner Weir, Colonel Swinhoe, Mr. Blandford, Mr. Verrall, Mr. Slater, and Mr. Jacoby took part in the discussion which ensued (*cf.* Proc. Ent. Soc. 1891, p. ii.). Mr. S. G. C. Russell exhibited *Hesperia alveolus*, variety *taras*, taken by him at Woking in April last. Mr. J. M. Adye exhibited a long series of *Moma orion*, *Eurymene dolobraria*, *Amphidasys betularia*, and *Hylophila prasinana*, and a few specimens of *Notodonta dodonea*, *N. chaonia*, and *N. trepida*, *Acronycta alni*, and *Selenia illustraria*, the majority having been bred by him in March and April last, indoors, from larvæ obtained in the autumn of 1892 in the New Forest. Mr. Goss read a copy of a letter received by the Marquess of Ripon, at the Colonial Office, from the Governor of the Gold Coast, reporting the occurrence of vast swarms of locusts at Aburi and Accra, West Africa, about the middle of February last. The writer stated that at Accra the swarm extended from east to west as far as the eye could see, and appeared to occupy a space about two miles wide. Colonel Swinhoe stated that some years ago he had been requested by the Indian Government to report on plagues of locusts. He said he had witnessed swarms of these insects far larger than the one just reported from the Gold Coast, and mentioned that many years ago, when going up the Red Sea in one of the old P. and O. paddle-boats, the boat had frequently to stop to clear her paddle-wheels from locusts, which had settled in such swarms as to choke the wheels and stop their action. Mr. C. G. Barrett called attention to a field excursion to the Cotswolds which it was proposed to have in June, Fellows of the Society were requested by the President to communicate to Mr. Barrett, as early as possible, their views as to the date which would be most generally convenient for such excursion, and to offer any other suggestions on the subject which might occur to them. Mr. E. C. Reed, of Valparaiso, Chili, communicated a paper entitled "Notes on *Acridium paranense*, the migratory locust of the Argentine Republic." Colonel Swinhoe, Mr. Champion, Mr. Elwes, Mr. McLachlan, and Mr. Merrifield took part in the discussion which ensued. Professor L. C. Miall communicated a paper entitled "Diceranota; a Carnivorous Tipulid Larva." Dr. T. A.



Chapman communicated a paper entitled "On a Lepidopterous pupa (*Micropteryx purpurella*) with functionally active mandibles." Mr. McLachlan said Dr. Chapman's observations were of great value, and tended to show that the position of *Micropteryx* was still nearer the Trichoptera than had been supposed. The President announced that the new Library Catalogue, which had been edited by Mr. Champion, with the assistance of Mr. McLachlan and Dr. Sharp, was now ready for sale to the public at 9s., and to the Fellows of the Society at 6s. a copy.—H. Goss, *Hon. Secretary*.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*April 27th*, 1893.—J. Jenner Weir, Esq., President, in the chair. Mr. Tutt exhibited a series of *Tapinostola concolor*, Gn., from Cambridgeshire, and remarked upon the extremely restricted range of this species, and in how very few localities it had been taken in any number. He pointed out the confusion that had arisen with regard to the nomenclature of this insect, in consequence of Hübner's figure of *T. extrema* having blackish cilia. Mr. Weir mentioned that specimens of *Polyommatus dispar*, Haw., had realised £6 each on Tuesday last, at Stevens's Auction Rooms. Mr. W. H. Wright exhibited a very long and variable series of *Bombyx castrensis*, L., bred from larvæ captured on the banks of the Medway, and mentioned that his experience was, that unless the larvæ were, say, within about a week of being full fed when captured, they usually refused to feed, and seldom came to perfection. Mr. R. Adkin and Mr. Tutt both corroborated this view, stating this species was especially resentful to a change of habitat. In proof of the recent extraordinarily fine weather, Mr. Tutt mentioned that *Melitæa cinxia*, L., and other June species were on the wing in Guernsey, and that *Lycæna argiolus*, L., was flying at Hereford during the first week in April, and Mr. R. Adkin noted the rare occurrence of the blackthorn (*Prunus spinosa*) and whitethorn (*Cratægus oxyacantha*) being in bloom at the same time. In the course of some remarks upon *Colias edusa*, Fb., Mr. Tutt said it ought to have had a good chance of hybernating here this last winter. In Algeria and Morocco it could be got in all its stages, with the exception of the egg, nearly the whole year through, and that in the Mediterranean littoral it practically did not hibernate at all, but one brood followed the other in rapid succession.

*May 11th*.—Charles G. Barrett, Esq., F.E.S., Vice-President, in the chair. Mr. R. South exhibited a series of *Diurnea fagella*, Fb., from Buckinghamshire, the light and dark forms being about equal in number. Mr. South said that the trees in the wood in which they were taken were darker on their western side than on their eastern, and at the time he collected these specimens the wind was in the east and most of the moths were at rest on the western side of the trees, the dark insects being inconspicuous, and he thought that if this often happened when this species was on the wing, it would, by natural selection, tend to produce a darker race. Mr. Barrett, in referring to the breeding of *Bombyx castrensis*, L., in captivity, said the larvæ should be well wetted at times and exposed when possible to the sun, and he thought the absence of the latter in some years might account for the uncertain appearance of this species. Mr. Turner said that he had bred *B. castrensis* very successfully on rose-leaves dipped in salt water, the discussion being continued by Messrs. Tutt, Frohawk, and South. Mr. Adye exhibited a long series each of *Moma orion*, Esp., *Eurymene dolobraria*, L., *Amphidasys betularia*, L., *Hylophila prasinana*, L., &c., and odd specimens of *Acronycta alni*, L., *Notodonta chaonia*, Hb.,



*N. dodonea*, Hb., *N. trepida*, Esp., &c., the majority having been bred in March and April, indoors, from larvæ taken in the New Forest last autumn. Mr. Tutt said that on the 6th May *Lycæna bellargus*, Rott., was on the wing in Kent; also *Nemeophila plantaginis*, L., *Euclidia glyphica*, L., &c., whilst pupæ and larvæ of *Vanessa urticæ*, L., were reported for the same date. Mr. Jäger mentioned that *Cidaria truncata*, Hufn., was now emerging, and Mr. South said he had bred *Coccyx strobilana*, Hb., from cones of the spruce fir obtained in Buckinghamshire.—F. W. HAWES and H. WILLIAMS, Hon. Secretaries.

*Field Meeting.*—An afternoon excursion was made on Saturday, May 13th, to Horsley, six miles from Guildford. The members assembled at Waterloo about 2 o'clock, as the Committee had arranged; and after an hour's pleasant journey by train, mainly through a fine collecting district, arrived at their destination. The first insect captured was *Euchloë cardamines*, on the road-side near the station, and quickly nets were swinging in all directions, for *Emmelesia albulata* was crossing the road in numbers. We entered the field to the right, and were soon busy with the pretty, but swift, *Heliaca tenebrata* (*arbuti*). Here were more *E. cardamines* with *Pieris napi*; *Syrichthus malvæ* and *Nisoniades tages*, somewhat worn; *Polyommatus phlæas*, *Lycæna icarus*, and *Cænonympha pamphilus*, freshly emerged; *Euclidia mi*, *E. glyphica*, and *Pyrausta purpuralis*, in their usually damaged state; and of course the two pests, *Crambus hortuellus* and *C. pratellus*, were well in evidence. Adjoining these fields was a shady pond, which produced, among other treasures, several species of *Agabus* to the only coleopterist of the party. Proceeding along the edge of the wood many Geometers were driven out; *Lamasphilus marginata*, *Cabera pusaria*, *Acidalia remutaria*, and *Asthena candidata*, in good condition; one or two *Bapta temerata* and a single *Zonosoma annulata* (*omieronaria*) were captured. The larva of *Cleora lichenaria* was searched for, but failed to put in an appearance. Almost every bush of spindle was swarming with the larvæ of *Hyponomeuta evonymella*. Among some young birch and underwood, *Euchelia jacobææ* was in full force, and an odd *Pararge megæra* was noted with *Melanippe montana*. Wandering on through the fields, the beautiful larvæ of *Diloba cæruleocephala* were seen defoliating the sloe; *Emmelesia albulata* was in swarms, flying over the grass in the field next the Guildford Road. Geometerid larvæ, including the beautiful *Hybernica defoliaria*, seemed plentiful wherever any beating was done. Crossing the road by the church, we took the path leading to the sheep leas. Under the beech trees on the right were many spikes of *Cephalanthihera grandiflora*, with a few *Listera ovata*; there was also *Daphne laureola*. When the open leas were reached, there were the blues, *L. astrarche*, *L. icarus*, with *Cænonympha pamphilus*, in large numbers, gradually seeking rest, as the sun went down, on tall stems of grass and other elevated coigns of vantage. On our return these were all quiet, and vars. were eagerly sought, but without satisfactory result. At the top of the leas more than two dozen were counted on one dead flower-spike of burdock. A plant of deadly nightshade (*Belladonna atropa*), which on a former visit of the Society was more than seven feet high, was again rearing its head; and on an old stump near, the allied *Solanum nigrum* was growing. All the burdock leaves around this part were well riddled by the larvæ of *Aciptilia galactodactylus*, and a few late ones were found by the searchers. Now we dispersed; and when afterwards comparing notes several additional species were added to our list, including one *Epione advenaria* and one *Bapta bimaculata* (*taminata*);

*Bupalus piniaria*, *Cidaria associata*, *Phytometra viridaria* (*ænea*), *Iodis lactearia*, *Ematurga atomaria*, and *Strenia clathrata*, recorded; *Anaitis plagiata* and *Botys hyalinialis* were just emerging; specimens were also taken of *Spilodes verticalis* (*cinctalis*), *Xanthosetia hamana*, *Cidaria corylata*, and *Melanippe rivata*. Our Micro-lepidopterists, among other things, noted the cases of *Fumea intermediella* (*nitidella*); and imagines of *Carpocapsa grossana*, *Eupæcilia ciliella*, *Glyphipteryx fuscoviridella*, and *Elachista argentella* (*cygnipennella*). Our return, over a portion of the same ground, was most productive in specimens, but only *Phalera bucephala* and *Zonosoma linearia* (*trilinearia*) were new. The walk to the station through the quaint village produced a specimen of *Melanthia ocellata*; and two of our number who had gone to the rhododendrons reported that, to their chagrin, all the shrubs were burnt, together with much of the surrounding forest. Our journey home was most pleasantly spent in relating experiences, &c.; and I believe all returned thoroughly pleased with the meeting, and heartily wishing that the field outing to Oxshott on June 10th, under the guidance of Mr. R. South, may be both as enjoyable and successful as this one had been.—HY. J. TURNER (on behalf of the Committee).

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—May 8th.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Robert Newstead, F.E.S., communicated a paper entitled "On a successful method of rearing *Deilephila galii*," in which he gave his experience of rearing this species in 1888, and stated that cold was fatal to the larvæ, and that forcing was absolutely necessary for the pupæ. The author also added some notes on "Lepidoptera attracted by Honey-dew." The President exhibited some fine varieties of *Boarmia rhomboidaria*. Mr. Collins, *Hadena suasa*, and a Lancashire specimen of *Boarmia abietaria*. Mr. Deville, African *Pieride*. Mr. Sharp, Coleoptera from Wales. Dr. Ellis, Coleoptera from Grahams-town, South Africa. Mr. Watson, *Papilio macleaniana* and *P. sarpedon*.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—April 17th, 1893.—Mr. W. G. Blatch, President, in the chair. Messrs. R. C. Bradley, W. Harrison, and C. J. Wainwright, each exhibited long series of *Bombylius major*, from Trench Woods, where they were quite common at Easter. Mr. Wainwright also exhibited a long series of *Melanostoma ambigua* and other Diptera, taken at the same time and place. Mr. A. H. Martineau, *Prionus coriarius* and other insects, from Solihull. Mr. R. Freer read a paper upon "Variation, with special reference to Melanism," and exhibited insects in illustration. He said that melanism was due to scales, in which he believed granules of pigment were deposited in rows; this conclusion he had arrived at from microscopical observations. He believed that both a deficiency and a superabundance of pigment were pathological conditions, and this he illustrated by reference to the human race. He showed that in those localities where melanic forms mostly occurred, the conditions of life were not very favourable; such were sea-shores, where food-plants had low nutritive power; isolated spots where there was much inbreeding; the neighbourhood of large towns, &c.; and he believed that these conditions of life were the cause of pathological conditions in the organism, with melanic results. He believed pigment to be an expression of energy.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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## SEX RATIOS IN BUTTERFLIES, AND AN INFERENCE.

BY THOMAS E. BEAN.

MUCH has been said for and against the proposition that in general more male than female butterflies are produced. As a contribution to that discussion I present below the results in a pretty extensive breeding of *Colias christina* and *C. elis*. Each brood mentioned is a family raised from eggs of one female. This experiment was conducted very carefully, the object being to ascertain the variational capacity of the two species and their degree of alliance to other closely related forms. *C. christina* was fed on *Hedysarum boreale*, var. *albiflorum*, *C. elis* on *Astragalus alpinus*, special care being taken to avoid introduction of a stray larva, and also to keep the several families strictly separate. The broods of *C. elis* were numbered 1 to 9 inclusive, those of *C. christina* 1 to 18 inclusive (omitting number 4). All the families were subject to uniform treatment and conditions. The eggs were laid during July and August, 1890, the larvæ, wintered under a deep shelter of snow, resuming active life in May, 1891.

The butterflies came from pupa in June and July, the proportion of males and females being as follows:—

### *C. christina*.

Brood No.	1	...	...	7 males,	11 females.
"	2	...	...	1 male,	2 "
"	3	...	...	5 males,	18 "
"	5	...	...	19 "	21 "
"	6	...	...	17 "	10 "
"	7	...	...	5 "	5 "
"	8	...	...	5 "	3 "
"	9	...	...	1 male,	9 "
"	10	...	...	16 males,	8 "
"	11	...	...	8 "	12 "



Brood No.	12	...	...	7 males,	5 females.
"	13	...	...	8 "	16 "
"	14	...	...	10 "	5 "
"	15	...	...	6 "	4 "
"	16	...	...	No males,	5 "
"	17	...	...	"	6 "
"	18	...	...	1 male,	3 "

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Total 116 males, 143 females.

*C. elis.*

Brood No.	1	...	...	17 males,	9 females.
"	2	...	...	2 "	5 "
"	3	...	...	No males,	12 "
"	4	...	...	8 "	1 "
"	5	...	...	No males,	8 "
"	6	...	...	"	13 "
"	7	...	...	"	18 "
"	8	...	...	4 males,	2 "
"	9	...	...	1 male,	1 "

---

Total 32 males, 69 females.

In above experiments the resulting numerical proportion of the sexes conclusively shows a *control from some cause or causes entirely apart from the influence of variations in nutrition*. Some writers, contending that sex is partly decided by the quantity or quality of food available to the larva, have been too prompt in claiming as proofs all incidents which seemed capable of bearing such construction, ignoring the fact that the same incidents would equally well support other and quite dissimilar solutions of the general problem. It is not my purpose to discuss here the question whether nutrition and other elements of environment do in any instance determine sex, but merely to show that in some cases at least sex is evidently *dependent upon antecedent causes*, the influence of external conditions not applying. Regarding the peculiarly variant numerical results in the present experiment, my impression is that they are due to a cause which has been too much neglected in the study of various problems regarding species. In considering this incongruous set of sex ratios, it is of importance to remember that each of the *C. elis* and *C. christina* females which laid one of the several sets of eggs, was only in an incomplete degree representative of its species. To exhibit fully the species *C. christina*, very many varying individuals would be required. Although I have collected this butterfly during seven seasons, and my collection shows several hundred instances, all noticeably differing, I am not confident that the entire species has been obtained. And to fully

reproduce these two species in one season, the entire egg product from a very large number of females might be requisite. It is easily seen then, that each of these broods from eggs of one female constitutes *a mere fragment* of a species. As the several broods, though bred in practically identical conditions of environment, differ abruptly and decisively in their sex averages, it seems evident that this emphatic diversity is a result of antecedent causes. In the main, the amount and kind of character the brood possesses was conditioned in advance by the limitations of the antecedent female. I do not mean that in every brood the progeny (if females) will closely resemble the female which lays the eggs; but in my experience such similarity occurs in a very large proportion of cases, sometimes combined with a minor quantity of character strikingly dissimilar. If the sex proportions in these broods agreed with the early or late laying of the eggs, a seasonal law would seem to be indicated. Since, however, the sex ratios appear to be out of relation to the seasonal stage, my conclusion must be limited to the statement that apparently *some of the females laid a greater number of male eggs, while others produced female eggs in larger proportion*, with the inference that *in the present experiment sex must be referred back to the egg*.

Laggan, Alberta Province, Canada.

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## SUGGESTIONS FOR DECOYING BUTTERFLIES.

By H. G. KNAGGS, M.D., F.L.S.

(Concluded from p. 182).

In the trap which we are about to discuss, rapidity of action is of paramount importance; lightness combined with strength, and a spring of sufficient power to act almost instantaneously, are the great desiderata: the materials here suggested are considered adequate, but of course by increasing the calibre of the spring still swifter action may be obtained, or a larger net may be used.

This brings us to Fig. 4. A, B B, its opposite fellow (not shown), and C, are four bamboos, such as used for gardening purposes, each two feet long; this size is preferred because, although a larger four foot square net would cover more space, the spring required to work it must be very powerful, and on the whole I find the smaller one acts with much greater rapidity. All these four sticks agree in having a moveable ring D whipped on at about an inch and a half from each end, but B and its double have also another ring E, fixed and rigid, as used for fishing rods, opposite to the corresponding ring D, as shown in the





nearly as possible just outside the axis of the stick B B, as shown at G. Now pass the free end of the cord H over the pulley G, bring it under and fasten it to the fixed ring E, then take the cord H and spring K back the full length, keeping them parallel with the stick B, but without stretching, and peg down the sail eyelet with the wire L a; when both sides have been thus prepared, the stick A may be steadily made to describe a semi-circle round C until, in the direction of the arrow and dotted line R, it reaches the ground, here it will probably have to be pegged down with a bent wire O in the case of a two foot net, but much depends on the nature of the ground. With a four foot net it is generally necessary to give it a start with a lever represented at P, the dotted lines P a showing the action of the same; with the wire O it is a good plan to whip on a ring such as used for the end of the top joint of a fishing-rod, and attach the pulling cord to this. Having fixed the decoy five or six inches in front of the set net, perhaps the operator would like to stick an artificial flower, mounted on wire and of the colour of the species sought, in front of the decoy, or, in the case of *Apatura*, possibly a dead animal or reptile, though to my fancy a piece of broken looking-glass would be best for the purpose; this might first be used as a heliograph to throw a few Morse dots and dashes on to his Majesty's august person in order to attract his attention, and then laid down before his effigy as a fair imitation of water, and an invitation "to liquor."

Then having retired to the place of concealment with the two cords, pull remittingly at the thin one to work the decoy, and bide your time. Should the species wanted catch sight of the bait, it will probably make for it, and hover over it for a few moments. Now is your chance, let fly with the thick cord, hurry up, don't be excited, secure the prize, reset the net, and when you get home, write off to the 'Entomologist,' and tell us all about it.

I have satisfied myself that the *modus operandi* is quite practicable, that the apparatus will work effectively, and that butterflies will "tumble into it"; my apparatus was set on our grass plot, and our first attempt with a white paper decoy met with no success to speak of; but I recollected that there were the remains of a white butterfly captured last year by one of my grandchildren; I managed to find these, pasted them on to the decoy frame, and, being rather out of spirits with my previous failure, gave the cords to my attendant to work; in less than a minute he missed a splendid chance—had time enough to pull the cord half a dozen times, but left it till too late. And so I reset the trap, and took up the reins myself, and in less than another minute—Swish, whack! and mechanical decoying was a *fait accompli* so far as *P. rapæ* was concerned. I did set the trap again, but before I could get to my hiding-place our kitten came

upon the scene, and, being used to playing with string, inadvertently let the thing off, which so astonished it that it gave a big buck-jump, and went scampering down the garden with—oh! such a tail! After that I drew the stumps, and at once set to work to finish this paper.

I should not like to have floated the idea as pure theory, but, as you see, I have had sufficient practical experience to convince me that, if somebody will only oblige by giving mechanical decoying a trial in the coming season, it will soon rank as one of the best methods of capturing our high-flying and swift-flying butterflies.

Camden Road, N.W., April, 1893.

## A FORTNIGHT'S COLLECTING AT BUDAPEST.

By W. E. NICHOLSON.

(Concluded from p. 193.)

THE following is a list of the species we captured or noticed during our visit:—

*Papilio machaon* and *P. podalirius*.—Both these species occurred here and there, but were far from common.

*Thaïs polyxena*.—The larvæ were abundant on *Aristolochia clematitis*, especially on the Adlersberg. Notwithstanding their defensive osmateria, a large number of them are stung by *Agyron tenuicorne*, Gravenhorst.

*Parnassius mnemosyne*.—Single specimens of this species were taken in the wood near Budafok and on the Schwabenberg. Both localities are at rather a low elevation for this mountain butterfly.

*Aporia crataegi*.—Very abundant. We noticed the larvæ doing considerable damage to fruit trees at Budafok.

*Pieris brassica*, *P. rapæ*, and *P. napi*.—Fairly common and generally distributed. *P. daphidice*.—Not uncommon in open places.

*Euchloë cardamines*.—Occurred singly near Budafok.

*Leucophasia sinapis*.—A rather well-marked form of this species occurred near the Wolfsthal.

*Colias hyale*.—Occasional specimens were seen near Budafok. *C. edusa*.—Two or three specimens only were seen. We were, unfortunately, too early for the local species *C. myrmidone* and *C. chrysothome*, which occur near Budapest.

*Gonepteryx rhamni*.—Not uncommon in wooded places.

*Thecla spini*.—A fine form occurred in the wood near Budafok. *T. w-album*.—A few specimens were taken at Budafok, flying round elm trees, by Mr. Lemann. *T. ilicis* var. *asculi*.—Specimens of this form of the species occurred with *T. pruni* at Budafok. *T. acacia*.—The commonest species in the district, occurring in all the localities. It was especially abundant at the Adlersberg, frequenting the flowers of various Compositæ. *T. pruni*.—Not uncommon at Budafok and near the Blocksberg, frequenting blackthorn bushes, but difficult to obtain in fine condition. *T. rubi*.—A few belated specimens occurred throughout the district.



*Polyommatus dispar* var. *rutilus*.—A few worn specimens were taken, both at Budafok and on the Adlersberg. From a few ova, which I obtained by enclosing a female in a gauze bag over a piece of dock, I had the pleasure of rearing three fine specimens on my return to England. I do not remember noticing *T. phlœas* during our visit.

*Lycæna argiades*.—Two specimens were taken by Mr. Lemann on a large island, known as Csepel, below Budapest, near the left bank of the river. *L. ægon* and *L. argus*.—Occurred throughout the district in open places. *L. icarus*.—Common everywhere. *L. corydon*.—Rather common. *L. admetus*.—This species was just beginning to emerge. A single specimen was captured by Mr. Lemann on the 24th June at the Schwabenberg. *L. argiolus*.—Occasionally in bushy places. *L. semiargus*.—A rather fine form was not uncommon in the Wolfsthal. *L. alsus*.—Generally distributed. *L. cyllarus*.—Occurred in various places. The females are of the dark form. *L. iolas*.—Not uncommon round *Colutea arborescens*, principally near the Blocksberg locality.

*Vanessa c-album*.—Rather common near Budafok, often frequenting the beds of dried-up torrents. *V. polychloros*.—Two specimens of a rather small form were taken near the Wolfsthal, and traces of the larvæ were noticed on some trees of *Celtis australis* in Buda. *V. urticae*, *V. io*, *V. atalanta*, and *V. cardui*.—Occurred singly throughout the district. *V. cardui* was not in the same abundance as it was in England at that time.

*Melitæa dictynna*.—A few specimens were seen in the Wolfsthal. *M. cinxia*.—Occurred near Budafok, between the village and the wood. *M. trivia* was said by Herr Pavel to occur along with *M. cinxia*; but I have not been able to identify any of my specimens as belonging to this species. *M. phæbe*.—Abundant throughout the district. *M. athalia*.—Common in open places in woods, especially near the Schwabenberg.

*Argynnis paphia*, *A. aglaia*, *A. adippe* and var. *cleodoxa*, and *A. niobe* ab. *eris*.—All these species occurred in meadows near the Schwabenberg. *A. latona*.—Rather common, especially near Budafok. *A. hecate*.—Occurred throughout the district, but most abundant in the meadows on the Schwabenberg, especially in a field near the station of the cog-wheeled railway. *A. dia*.—Common, and generally distributed.

*Melanargia galatæa*.—Abundant. A single specimen of the var. *leucomelas*, female, was secured.

*Satyrus hermione*.—Not very common. *S. circe*.—Not common, frequenting the trunks of trees in the Schwabenberg locality. *S. semele*.—Rather scarce. The specimens secured are rather dark.

*Pararge megæra*.—Dry places throughout the district.

*Epinephele hyperanthus*.—Not very common. Occurred at Budafok. *E. janira*.—Common everywhere.

*Ctenonympha iphis*.—Not uncommon in a damp meadow near Budafok, but nearly over. *C. pamphilus*.—Common everywhere. Some of the specimens are unusually large. *C. arcania*.—Common in the wood at Budafok.

*Spilothyrus althææ* and *S. lavateræ*.—Occurred singly in stony places on the Blocksberg, but were far from common.

*Syrichthus carthami*.—Generally distributed, but not common. *S. orbifer*.—Occurred in the Adlersberg and in the Wolfsthal. The spring brood, however, was very nearly over at the time of our visit.

*Hesperia thauwas*.—Common everywhere. *H. lineola*.—A rather large form of this species occurred with the last. Some of the specimens are



rather larger than average specimens of *H. thaumas*. *H. sylvanus* and *H. comma*.—Occurred singly, but not in any abundance.

The limited time at our disposal, and the absence of facilities for night-work, prevented us giving much attention to the Heterocera, though, of course, some of the commoner species thrust themselves upon our notice. The handsome *Smerinthus quercus* was found at rest in the Schwabenberg locality; and several species of *Zygæna*, including the local *Z. brizæ*, were common in various places. We understood from Herr Pavel that the larvæ of *Acherontia atropos* was not uncommon in the autumn on *Lycium barbarum*.

Among the Bombyces, the larvæ of *Ocneria dispar* occurred in extraordinary abundance on some small willows, growing in a piece of marshy ground bordering on the Danube. The willows were, in many cases, entirely stripped of their leaves, and the hungry larvæ were hurrying up and down the naked stems searching for food; while the central portion of the bushes was a tangled mass of web and cocoons. The larvæ of *Saturnia spini* were scarcely less abundant in some places on blackthorn.

Among the Noctuæ, a single specimen of *Cloantha perspicillaris* was taken at Budafok, where the larvæ of *Cucullia chamomillæ* were common on a species of *Matricaria*. While for the Geometræ, the sight of the pretty little *Lythria purpuraria*, which was abundant in open spaces by the sides of the roads, was somewhat novel for an English collector.

Lewes, March 22, 1893.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

BY W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 190.)

### SATYRIDÆ.

*EREBIA EPIPHRON* v. *CASSIOPE*, *Fb.*—"Croagh Patrick near Westport, Mayo. The locality for this species is about half-way up the mountain on the Westport side, in a grassy hollow, where a little hut is erected for the shelter of pilgrims. I captured a fine series here in June, 1854" (*B.*). I have seen no Irish specimens, nor have I heard that any visit to the above locality has been made since for the purpose. It would seem probable that other habitats may be found for the species on the range of mountains extending from Achill towards Nephin. Were it not that the alpine flora and entomological fauna have not usually, so I understand, a parallel distribution in Ireland, we might expect that the heights of Slieve League, Benbulbin, and Mount Brandon, would reward an entomologist by interesting discoveries in this direction.

PARARGE EGERIA v. EGERIDES, *Stgr.*—Everywhere abundant, and double-brooded.

PARARGE MEGÆRA, *L.*—Everywhere abundant throughout Ireland.

SATYRUS SEMELE, *L.*—Widely distributed throughout the coast-line from Donegal, Derry, Antrim, Newcastle, Co. Down, Howth, Arklow, Minehead, Kinsale, Dursey Island, Galway, and Sligo; and often it is very numerous. It also occurs locally inland in rocky districts in Ulster, and the South and West; such as New Ross, Wexford (*B.-H.*); and Moycullen and elsewhere in Co. Galway. The Irish insect is fine and well marked, but neither in size nor colour is comparable to specimens I have taken in France, North Italy, and Switzerland. The blotches of upper side are occasionally of a deep rusty red in male, and paler rufous in female. Minehead, Co. Waterford; and Markree, Co. Sligo, &c.

Var. *aristæus*, *Bon.*—A very fine form occurs rarely, which seems referable to this variety. A female, sent me from Co. Galway by a friend, may be thus described:—Expanse, 2 in. The whole inner area of all wings tawny fulvous, the streak or blotch bearing the apical ocellus of fore wing paler, and bounded interiorly by a dark rectangular costal patch, sharply defined against the fulvous ground. The apex of the fore wing and outer margins are dark greyish brown like the type, and the costa and inner margins lightly shaded with the same. The under side of fore wing entirely fulvous, except the costal and outer margins and the ocelli. That of hind wing is very strongly marked, and the waved pale median band very white.

EPINEPHELE IANIRA, *L.*—Everywhere common. The male sometimes shows on the fore wing a series of faintly-marked fulvous blotches, and the apical ocellus has sometimes a second small one attached below. The Rev. James Bristow has a specimen with a small ocellus towards the anal angle, and a minute one between it and the apical. This aberration is evidently a reversion to the general design of the Satyridæ, and thus is very interesting. Mr. Dale refers to this aberration as having come under his notice also ('British Butterflies,' p. 98). Occasionally in Ireland the female shows an equally interesting genetic character, in the apical ocellus being bipupilled as in *tithonus* and *ida*. This aberration has been taken in Westmeath by Miss Reynell, and I have others. I have also seen similar specimens from Scotland and Kent in Mr. Tugwell's and Mr. Tutt's cabinets respectively. The female is often very large and brightly coloured, the fulvous patch much extended, and on both wings. I have seen this in Galway and in Monaghan, and elsewhere. It would appear to be the var. *splendida* of Dr. Buchanan White. I have one specimen from Waterford (*U.*), with large fulvous band on fore wing only, and the ocellus unpupilled.



**EPINEPHELE TITHONUS, L.**—This species seems to be almost confined to the southern counties. Mr. Birchall records it from the Co. Wicklow, where, however, it must be scarce. Mr. Sinclair mentions a specimen taken by Mr. G. Webb near Dublin. A few taken in Galway (*R. E. D.*). It occurs at New Ross (*B.-H.*), Co. Wexford; in Co. Waterford at Cappagh, abundant; Minehead, Queenstown, and Glengarriff, abundant. A similar genetic aberration, both in male and female, to that described as occurring in the preceding species, *i. e.*, with two spots below the apical ocellus, is preserved in Mr. Tugwell's cabinet from Devonshire; and I have a similar one from Brecknockshire. I have not observed it in Ireland. I have an Irish specimen with the whole upper and under sides of a unicolorous ochre colour, like that of *Cænonympha pamphilus*, the apical ocellus of fore wing being dark and distinct above and beneath, but the marginal border almost obsolete. The paler waved band on under side of hind wing is represented.

**EPINEPHELE HYPERANTHUS, L.**—Mr. Birchall remarks that this butterfly is rather local in Ireland; but I think this is only true in so far as that it is chiefly confined to sheltered meadows. It is very common in many places in the counties of Dublin, Wicklow, Waterford, Cork, Kerry, Limerick (*N.*), Galway, King's Co., Westmeath, and Leitrim; in Monaghan at Drumreask, and elsewhere; Tyrone at Favour Royal; and in Donegal, about the town of Donegal and Lough Eske, Mountcharles, Rathmullen, and Inishowen (*W. E. H.*); near Derry rare and local (*C.*); Co. Antrim, Ballymoney, abundant (*C.*), also at Antrim; and generally abundant near woods throughout the county (*W.*). It varies in the size and number of the ocelli, and the male sometimes is devoid of them on the upper side; but I have not noticed the var. *arete*, perhaps for want of searching. A female has been taken at Cromlyn (*Mrs. B.*), with the annular spots on the fore wing as large above as they are generally beneath. The tendency seems rather toward the development of the ocelli in the Irish insect than their suppression.

**CÆNONYMPHA TYPHON, Rott.**—Widely spread throughout Ireland on the bogs and mountains. Mr. Birchall, who found it commonly in Galway, Mayo, and Kerry, was of opinion that the Irish form was the typical *davus* of Fabricius, as distinguished from the darker and more ocellated var. *philoxenus*, Esp. (*rothliebii*, Stgr.), from Lancashire, Westmoreland, and Yorkshire. It is true that I have at Killarney, Westmeath, Galway, and Sligo, met with single specimens of the var. *laidion*, but the Irish usual form is well ocellated, frequently of a dingy brown coloration, and is distinctly a transitional form between the two extremes. It is interesting that the characters presented do not much differ over such wide tracts of bog and moor. In the vicinity of Mohill, Co. Leitrim, and on the banks of the Shannon



near Ballinasloe, I have found the darkest specimens, with the under side of hind wing darkly shaded, and the ocelli large and strongly marked. It varies in size, but generally averages that of the Yorkshire variety. Localities:—Co. Kerry, widely spread; also Co. Cork, Co. Sligo, on the Oxhill range and near Lake Gill; plentiful near Ballinasloe and by Banagher eastward over the bog Allen to Kildare, King's and Queen's Cos.; near Mullingar and on the bogs of Westmeath, very abundant; Connemara and Co. Galway, generally abundant; Tyrone and Monaghan, &c.

*CÆNONYMPHA PAMPHILUS*, L.—Common in every suitable locality, varying somewhat from pale yellow to a strong ochreous colour. The ocellated markings and interrupted band on the under side of hind wing also vary, but not in any remarkable degree. Mr. Russ takes specimens near Sligo with fringes slightly tinged with yellow.

(To be continued.)

## NOTES AND OBSERVATIONS.

**VARIATION OF *ZYGÆNA TRIFOLII*.**—Although the fact does not appear to be generally recognised, the typical form of this species is that in which the central pair of spots are united. I have examined considerable numbers of living specimens in the field, also a great many set specimens which have been sent me by correspondents in various parts of the country, and find that the typical form is much less common than that in which the central spots are well separated. In the following remarks on the variation of *Z. trifolii*, it will be convenient to consider the commonest form as the type; the various mutations can then be tabulated as follows:—

*a. (orobi*, Hübn., fig. 133.) Central pair of spots well separated. In some examples of this form the upper spot of central pair is very small. The lower one is variable in shape; most frequently it is round or nearly round, but often more or less oblong or square, and sometimes triangular.

*b. (trifolii*, Esper, pl. xxxiv. fig. 5; Hübn., fig. 135.) The central spots united, but quite free from either basal or outer spots.

*c. (glycirrhizæ*, Hübn., fig. 138.) The central spots united together, and also with the outer or fifth spot. Union of the central confluent spots with the outer spot is effected by an inward extension of the lower edge of the latter, and an outward expansion of the former. Sometimes the spots referred to are only united on one wing.

*d. (basalis*, Selys, Ann. Soc. Belg. 1872.) The central spots confluent and united with the basal pair. In most examples of this form union of the spots is effected by an inward and outward expansion of the lower central and basal spots respectively, but in some rare instances the four spots are as broadly connected as they are in var. *e*; the outer or fifth spot is in all cases isolated.

*e. (minoides*, Selys, Mém. Soc. Roy. Sci. Liège. 1844; *confluens*, Staud. Cat. 1871.) All the spots united, forming a longitudinal band with irregular edges. This is probably the most extreme form of variation in marking to which the species is subject. Sometimes the basal and confluent central

spots are only connected by a thin dash, and a similar dash unites the central spots with the outer one. This modification is represented by Hübner's figure 166, and appears to be a combination in part of the forms *c* and *d*.

I have taken one or more specimens of each of the above forms this year in Middlesex. Besides the aberration in markings the species also varies in colour.

*f.* Hind wings and spots on fore wings yellow. Mr. Christy discovered several specimens of this form (which, I believe, had not been previously observed) in West Sussex this year. I understand that they were found in company with ordinary coloured specimens, and that they exhibit a tendency to vary in the same way as typically coloured *trifolii*.

*g.* Hind wings and spots on fore wings orange-red. I have two examples of this colour, and some others of a slightly deeper shade. All these were taken in Middlesex this year, together with a specimen of the *orobi* form, in which the lower spot of central pair is yellowish red.

The blue-black border of hind wings varies greatly in width; it is often narrower in the typical form than in var. *orobi*, but some examples of the latter have the hind wings more narrowly bordered than typical *trifolii*. As a rule, modification in the width of this border appears to be quite independent of variation in the markings of fore wings.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

NOTE ON THE LARVA OF *ACRONYCTA ALNI*.—On the 12th of August, last year, I was fortunate enough to take, near Cardiff, a single larva of *Acronycta alni*, and on the 25th inst. I had the satisfaction of seeing a fine female imago emerge. A few notes which I made respecting this larva may be of interest, and I venture to send them to you. The colour of the larva is sooty black, the surface of the body being dull, while the head and legs are very glossy and like jet. The head is about as broad as the second segment. On each segment is a raised sulphur-coloured patch crossing the back transversely, and terminating abruptly without reaching the spiracles; these patches have rather the form of a blister, and are depressed in the middle in the direction of their length; they vary in size, and those on the 11th and 13th segments are absent or nearly so. The larva carries a remarkable series of black appendages, each of which may be compared to a feather stripped to the quill, excepting the tip; they are soft, and proceed from the ends of the dorsal patches; there are three on each side of the 2nd segment and one on each side of the 5th to 10th inclusive, and of the 12th. The 12th segment is rather more prominent than the others. I found this larva feeding at about sunset on the broad-leaved willow, at a height of about 10 ft. from the ground and resting on the upper surface of the leaf; in fact, the mysterious appearance of its black head and six anterior appendages in motion at the edge of the leaf it was eating was what drew my attention. When disturbed I found it to have a habit of swinging the head round to the side of the body, and taking up the posture so remarkable in its near relative, *A. megacephala*; much annoyance only caused it to crawl away quickly. I should be glad to hear whether it has been found that this larva has the power of emitting any odour. A tin box in which it was confined was perfectly sweet before it contained it, but in a few hours afterwards I found it smelling quite putrid. I tried to trace the odour to the larva, but could not with certainty, and for the few remaining days of the latter's existence it remained. The larva then descended to



the bottom of the box (I had omitted to put any mould for burrowing) and lay motionless under its food, without making any attempt to protect itself, and there in due time pupated.—L. R. CRAWSHAY; 11, Manilla Crescent, Weston-super-Mare, April 29, 1893.

INSECTS AND THE SEARCH-LIGHT OF A WARSHIP.—In a recent lecture Mr. L. Newitt, electrician at the Elswick Works, referring to the electrical search-lights, said that in the late wars around the coast of Egypt, when the ships were over two miles from the shore, it was found that millions of winged insects were attracted by this beam of light, and travelled along the beam until they struck the glass in front of the projector, and fell into the well around the search-light, where they accumulated into a seething mass two feet deep. They had to be cleared out by the free use of a hose pipe; but these insects were such a pest that it became difficult to find a man who would stand by the projector to keep it working, owing to the attacks made upon him.

LITHOSTEGE GRISEATA.—This local moth is one of the species which sometimes passes two winters in the pupa state. In July, 1891, I was staying at Tuddenham, Suffolk, and having read in the 'Entomologist' that it occurred there, I searched the food-plant (*Sisymbrium sophia*) and found a few larvæ feeding upon the seeds, which changed to pupæ soon after. Only one moth emerged the following year (on 29th May). Four others appeared in April of the present year. They are very early, probably on account of the remarkably warm weather and having been bred indoors.—W. PASKELL; 48, Whyteville Road, Forest Gate, E.

REMOVAL OF GREASE FROM MOTHS.—The following additional remarks upon this interesting subject may be useful:—Petroleum is rock-oil (Canada; United States). Benzoline is the spirit distilled from petroleum; but it is not entirely free from oil. Benzine (or benzole) is the spirit still further rectified by distillation, and is (or ought to be) entirely free from oil. The difference in purity between benzoline and benzine can be tested in the following manner:—Pour a little on a piece of clean paper. After evaporation the benzoline will leave a trace of grease, varying in intensity according to the purity of the spirit. The best benzoline should have a delicate steel-blue tint. In the case of benzine, so evanescent is it that you have hardly time to turn before it is gone; but there should be no trace left behind, except the smell. The name "benzine" is often applied to benzoline, the test in this case being the price. "Collas" is, if I remember rightly, the name of a maker. The price, per pint, of benzoline is (about) fourpence, of benzine (about) two shillings. It will be observed from my remarks (Entom., p. 109) that I use *benzoline* for cleaning moths—and plaster of paris. The latter is applied as soon as the insect is lifted from the benzoline. It materially assists the drying, and absorbs any oil that may attach to the spirit. Even with the use of benzine, if the cleaning of a moth be confined to one immersion, the benzine will hold, in solution, the "grease" of the insect, and will therefore become impure. Hence the value of the plaster of paris, or of the continued use of benzine. It is evident that an insect can be thoroughly cleaned with the use of this spirit and without the help of plaster of paris. The chief consideration, to my mind, is the one of cost. I can assure Mr. Greene I have tried eviscerating the bodies of moths, labelling, breaking them off and putting them on again. But I failed. I never could, for instance, in re-fixing a



body, imitate to my satisfaction the natural symmetry and *pose*. But this, of course, only proves my individual inability, and not, as Mr. Greene generously suggests, that I am a skilful manipulator. The deviations from Mr. Greene's method, handed to me by a friend, were, in my case, most welcome. They may be of service to others who are not expert.—J. ARKLE; Chester, May 3, 1893.

*CIDARIA TRUNCATA* (RUSSATA) VAR. *PERFUSCATA*.—The caterpillar I referred to in my notes dated April 22nd (p. 197) turned out to be *Cidaria truncata* var. *perfuscata*. I found it at the bottom of a hedge just outside Chester, upon *Geum urbanum* (herb bennet or common avens), March 12th. It was in the act of changing its last skin. The following is a description:—About  $\frac{3}{4}$  in. long, and very thin. Colour, pale green, with two whitish, dorsal lines. Segment divisions yellow. Two pale green, anal, lateral and pointed projections faintly tipped with pink. The caterpillar folded over a portion of a leaf of its food-plant, March 19th. Although supplied with earth it spun a very slight silken covering inside this fold, and changed into a smoky-looking, ochreous chrysalis. The moth appeared April 24th.—J. ARKLE; Chester, April 25, 1893.

NOTE ON THE LARVA OF *ANTHERÆA CYTHEREA*.—I see, *ante* p. 135, a note from Johannesburg concerning a caterpillar stated to be "a large, handsome *Bombyx* . . . which seems to be widely distributed in South Africa." Perhaps this insect is the larva of *Antheræa cytherea*, which is very common in certain localities near here, and which is very fond of the guava tree. I got a few of the larvæ last season (October and November), and under very adverse circumstances managed to get three to the pupa stage, of which apparently one is a female. The perfect insect is due to appear this month. My information concerning this insect was kindly given me by Mr. Trimen, the Curator of the S. African Museum.—PHILIP DE LA GARDE; H.M.S. "Raleigh," Cape of Good Hope, April 20, 1893.

LEPIDOPTERA BRED IN MAY, 1893.—The following species of Lepidoptera were bred by myself during May of the present year, viz.:—*Papilio podalirius*, L., a female, apparently slightly passing to the variety *undecimlineata*, Eimer, from a chrysalis found on a wall here, on April 17th last. *Undecimlineata*, it may be well to state, has eleven black bands on the front wings, instead of the usual number, which give the insect a somewhat striking appearance. *Anthocaris belia*, Cr., one female, bred from a larva found at La Roquette (Alpes-Maritimes) on March 24th last, which pupated on April 20th following, and am expecting more from chrysalids of this year's rearing. I may here be excused for noting, that the spring pupæ of *belia* are of a faint greenish hue, with dull crimson-reddish dorsal line, and edged with stripes of the same colour; tip, reddish. Hybernating chrysalids of the summer brood, on the other hand, are greyish brown, and the points are black. This latter batch also seems somewhat smaller than those of the spring brood, and they often remain for two or even three years in the pupal state. A male example of *A. cardamines*, L., came out in my puparium, reared, *ab ovo*, from an egg found, among others, in Nice, last spring. I also got a crippled female of the same species in one of my cages, also from last season, but am unable to find the date of its emergence in my diary. Of *Anthocaris euphenoides* (which seems rather scarce this year), a female was bred with a tendency to deformity, on May 3rd last, from a larva, among others, fed on *Sisymbrium*

sp.? at St. Martin Vésubie, Alpes-Maritimes. This locality is just 3300 feet above sea-level, and it is interesting to note that this is almost the extreme limit of its distribution in the mountains, though I have seen it in a spot, near this latter place, which is nearly 4000 feet in elevation. And here, perhaps, I may be allowed to ask, have any readers of the 'Entomologist,' engaged in rearing pupæ, ever noticed the apparent tendency of many species bred from hibernating chrysalids to emerge in a crumpled, or otherwise deformed state? I do not remember to have ever seen the fact referred to. It also appears to me that pupæ which pass the winter months, require a much greater amount of attention (proportionately) to make them yield imago in good condition, than those spring or summer ones which hatch out in a few weeks' time. *Charaxes jasius*, L. (a female), came out in my puparium on May 1st, from a caterpillar, among others, received from Hyères. The pupa from which it emerged was formed on March 14th last. I may add that I continue to breed specimens of *jasius* in my cages at the time of writing. *Pterogon proserpina*, Pall. (= *ænothæa*, Schiff.), one example in my puparium on May 3rd last, from a hibernating chrysalis bred last autumn in the Alps, to the north of Nice; and as I still have two more pupæ left, I hope to get further specimens.—F. BROMILOW; Nice, France, May 22, 1893.

PROLONGED PERIOD OF EMERGENCE OF LARVÆ OF *ORGYIA ANTIQUA*.—On Sept. 18th, 1892, I found a web of the above moth, the ova laid, the female being still present and alive. Some few, about half a dozen outlying ova, hatched in about three weeks afterwards. The main lot, however, did not begin to hatch till March 20th, 1893, since which time they have been coming out in batches of a few at a time, with intervals of ten days or a fortnight between the batches; the last hatched a fortnight ago, and many eggs still remain unhatched. Newman gives ten weeks as the period of emergence, but if all these eggs prove fertile, and keep on hatching as they have done hitherto, there will be quite ten months between the emergence of the first and last larva.—N. F. SEARANCEKE; Mitcheldean, Gloucester, June 18, 1893.

LARVÆ OF *VANESSA IO* FEEDING ON HOP.—On June 17th I found about twenty larvæ of *V. io* feeding on the common hop (*Humulus lupulus*). Never having seen or heard of this caterpillar feeding on any plant other than *Urtica dioica*, I think it worth while to record the fact.—N. F. SEARANCEKE; Mitcheldean, Gloucester, June 18, 1893.

HYBERNATED *VANESSA ANTIOPA* WITH YELLOW BORDERS.—On March 30th last I captured, about ten miles from Wiesbaden, a fine hibernated specimen of *Vanessa antiopa* with yellow-bordered wings. Several hibernated specimens have been taken here, but all, with this one exception, had white borders.—E. A. MOLESWORTH; Villa Allblich, Bachmayerstrasse 10, Wiesbaden, Germany.

NOTE ON *ABRAXAS GROSSULARIATA*.—A friend of mine, writing to me from Hertfordshire on the 10th of June, called my attention to the fact that the larvæ of *A. grossulariata* had during this season deserted their usual food, *i. e.*, gooseberry, for a particular species of evergreen. Since the receipt of this letter I have made several enquiries from men owning fruit-gardens. One informs me that last year the larvæ did commence eating some of his evergreen shrubs, but the damage was trifling compared to



this season. It seems they have made this plant their sole food this summer, as almost all the currant and gooseberry bushes have escaped being attacked by these voracious pests. I have taken larvæ and pupæ, the latter being found on the under surface of the leaves of the evergreen. During the last few days I have captured many imagines, which could be seen flying from dusk till an hour after midnight. On the 14th I netted 26 females, but only 4 males, within an hour, our hall-door lamp proving a great attraction. The following night I again captured 32 females and 12 males, making a total of 74 on the two occasions. I notice that where this evergreen flourishes the moth is certain to be found. On the latter occasion they were most numerous up till half-past one o'clock in the morning, seeming to take advantage of the fresh midnight air. Though a resident in a London suburb, I find both larvæ and imagines of *A. grossulariata* most plentiful. As regards these Lepidoptera taking to evergreen in preference to gooseberry or currant, I should like to know if this fact has been recognised by other entomologists.—H. W. BELL-MARLEY; 60, Shaftesbury Road, Hammersmith, London, W., June 20, 1893.

[The evergreen to which our correspondent refers is probably the Japanese spindle-tree (*Euonymus japonicus*), which was introduced into this country about the beginning of the present century. The larva of *A. grossulariata* is known to feed on this shrub; indeed, in most of the London gardens the *Euonymus* is about the only food the larva in question could find to feed upon. We do not, however, remember to have seen any previous record of the larva preferring *Euonymus* to *Ribes*.—ED.]

LARVÆ OF AGROTIS RIPE. — I should be very glad of any assistance to solve a question that has been puzzling me for some time, namely, what becomes of the larvæ of *Agrotis ripæ* in the spring, after hybernation; they are very plentiful here in autumn, but in spring, search where I will, I can find none, though I have looked for them about where the food-plant grew, and some way up into the sandhills, under the banks, dry roots of sedge, &c., and dug down some depth in case the larvæ had gone deep into the sand. I shall be much obliged for any enlightenment on the subject.—SPORSWOOD GRAVES; 29, Victoria Street, Tenby, June 17, 1893.

NOTES ON NYCTEMERA ANNULATA.—The introduction of alien plants and insects into remote islands, and their effects, sooner or later, on the indigenous faunas and floras, is well illustrated in New Zealand. The rapid or slow extinction, in some districts, of some native plants, has caused numerous species of endemic insects to disappear at a corresponding ratio. When, however, alien plants of the same natural order have supplanted the native species, it is interesting to note how several species of insects have adopted the alien plants as food, and continue to multiply more than when their larvæ fed on the native plants; others, again, are becoming practically omnivorous, and are already causing serious loss to owners of both large and small gardens. The case of *N. annulata*, a large diurnal moth, may be cited as one of perfect adaptation to new food, by which the species continues to increase annually. The larvæ originally fed (and still feeds, in districts where the native flora is little affected) on *Senecio bellidioides*. In settled districts this plant has been supplanted by the introduced *S. vulgaris*. On the latter, and on the introduced *Cineraria maritima*, the larvæ now subsist, and thrive well on both. It may be here interesting to note that the larvæ, when feeding on *C. maritima*, consume only the soft fleshy upper surface of the leaves, and never, so far as I know,



eat the whole leaves or other solid parts of the plant. The substance must be very nutritious, as they feed up in about the same time as when fed on *S. vulgaris*, and are equally well developed. Mr. G. M. Thomson, F.L.S., informs me that last spring he planted out some greenhouse cinerarias in the flower border, and in a short time they were stripped of their foliage by larvæ of *N. annulata*. The same gentleman also records the larvæ as feeding at Dunedin on a glabrous-leaved species of introduced pelargonium. It is important to record these and other changes in the insect fauna of newly colonized countries, as they are interesting in their bearing on the specialisation of species. Although many are highly specialised, some are able to adopt new food or acquire omnivorous habits, and thus survive the change; others are unable to change their food or environment, and rapidly become extinct. No doubt many remarkable forms have already passed and are now passing away from this cause alone. It is the same cause, only in degree, which has extirpated, and continues to extirpate, several anomalous species in the New Zealand Avifauna.—W. W. SMITH; Ashburton, N. Z., April, 1893.

HOMOPTERA OF BRITAIN. — J. Edwards, Colesborne, Cheltenham, appeals to collectors of Homoptera for notices of captures in any part of the United Kingdom, for his forthcoming work on that group.

## CAPTURES AND FIELD REPORTS.

### THE EARLY SEASON :—

*Bucks.*—I have to record the capture of a specimen of *Argynnis adippe* this afternoon, a short distance from the Chalfont Road station, in fine condition, and that to all appearance had freshly emerged from the chrysalis. Is not June 8th a very early date for this species?—F. A. WALKER; Dun Mallard, Cricklewood, June 8, 1893.

*Cambridgeshire.*—*Papilio machaon* was out in full force in Wicken Fen on Thursday, April 27th, and a number were taken by about half a dozen Cambridge undergraduates, who had come up the river in a steam-launch, each armed with a net for that purpose. I decided to leave the field to the younger men, as I had captured the butterfly in the same locality several years ago, and perceiving that there were already quite as many engaged in the exciting chase as were likely to prove successful. Another large party was present on the occasion, consisting of male and female pupils of the popular Professor McKenny Hughes.—F. A. WALKER; Dun Mallard, Cricklewood, June 8, 1893.

*Devonshire.*—I was much interested with the various notices of early captures which appeared in the last number of the 'Entomologist,' and as I spent a considerable part of April at Instow, North Devon, and met with some species at an earlier date than yet mentioned, I send you a few notes of my experience. I arrived at Instow on the 14th of the month, and on that day, while the train was stopping at Morchard Road, noticed a bright and fresh *A. euphrosyne* disporting itself among the flowers in the pretty little station garden. *N. tages* was also seen the same day; and on the 16th was followed by *S. alveolus*. On the 18th, *tages* and *alveolus* were out in numbers; and *C. phlæas*, *A. fuliginosa*, *P. gamma*, *H. cespitalis*, and

*P. purpuralis* were taken. After sunset I went to the sand-hills, and took about fifty full-grown larvæ of *L. littoralis*. They were not as plentiful as usual, and no doubt the greater part had already buried. In ordinary seasons they are not fit to take until nearly the end of May. On the 20th, near Torrington, *A. euphrosyne* was well out, and *Euchloë cardamines*, *P. napi*, and *Pararge egeria* were in numbers; one *L. sinapis* was taken, and *L. argiolus* seen. On 21st, *P. palpina* emerged in a breeding-cage out of doors, and several *S. alveolus* ab. *taras* were taken. On the 25th, *E. mi*, *A. plagiata*, *C. unidentaria*, *L. petraria*, *C. pusaria*, *F. atomaria*, *M. montanata*, *A. candidata*, *L. adustata*, *C. propugnaria*, and *E. venosata* were obtained. On 26th, *E. glyphica* joined *E. mi*. On the 27th, a hot, hazy day, a party of us went to some woods and marshy meadows near Torrington. Here we found *A. euphrosyne* out in profusion, and many of them were already much worn. A beautiful variety was obtained. The chief feature of the day, however, was the capture of *A. selene* (1), *M. athalia* (2), and *M. artemis* (5), surely wonderfully early for these three species. Larvæ of *H. elutata* were in great abundance upon bilberry; *A. villica* was found sitting on a wall, just emerged. On the 29th, a full-fed larva of *G. papilionaria* and a dozen half-grown larvæ of *A. flavicornis* were taken from birch. The following were observed at Instow, previous to the 14th April, at the dates given:—*P. egeria*, 23rd March; *P. rapæ*, 25th; *P. brassica*, 30th; *A. cardamines*, 7th April; *P. megæra*, 11th. At Dovercourt, Essex, *P. rapæ* was first seen on the 12th March; and *B. parthenias* was common at Urabness on 21st. —GERVASE F. MATHEW; Lee House, Dovercourt, June 12, 1893.

Many species of Lepidoptera having been unusually early during the extremely hot weather of the last two months, a few dates may be of interest:—April 6th, *Nisoniades tages*; 13th, *Pararge egeria*, *P. megæra*, *Lycæna icarus*; 17th, *Euchloë cardamines*; 19th, *Arctia menthastri*; 24th, *Platyptilia gonodactyla*, *Leioptilus microdactyla*; 25th, *Hepialus lupulinus*; 29th, *Argynnis euphrosyne*. May 2nd, *Arctia lubricipeda*, *Acidalia marginepunctata*; 3rd, *Arctia villica*; 5th, *Dicranura vinula*; 9th, *Dasychira pudibunda*; 10th, *Notodonta trimacula* var. *dodonea*, *Grammesia trigrammica*, *Dianthæcia albimacula*, *Hadena adusta*, *H. genista*, *Agrotis exclamationis*, *Miana strigilis*, *Eubolia plumbaria*; 11th, *Notodonta camelina*, *Euplexia lucipara*; 12th, *Agrotis plecta*, *Axyليا putris*; 13th, *Leucania pallens*; 14th, *Phalera bucephala*; 15th, *Neuria reticulata*, *Rusina tenebrosa*, *Agrotis c-nigrum*; 17th, *Xylophasia rurea*, *Melanippe montanata*; 19th, *Camptogramma bilineata*. Three insects, viz., *D. pudibunda*, *A. villica*, and *G. trigrammica*, have been more than abundant.—JOHN H. STILL; Seaton, Devon, May 20, 1893.

Gloucestershire.—I saw a male specimen of *Colias edusa*, in good condition, at Bitton, on the 28th of April this year.—CHAS. BARTLETT; Branscombe, Woodstock Road, Redland, Bristol, June 9, 1893.

Hants.—The following is a list of my principal captures whilst staying in the New Forest:—May 18th, *Macaria alternaria* and *Eupistertia heparata* (out of alder), *Dasychira pudibunda*, *Bombyx rubi*, *Odontoptera bidentata*, and *Drepanula falcata*; 19th, *Notodonta dodonea*, three specimens, two male and one female, the latter laying about sixty eggs on the 21st, from which larvæ emerged on the 1st and 2nd June; 20th, *Sphinx ligustri* (at rest on a fence) and *D. pudibunda* (several males assembling round a newly-emerged female); 21st, *Macroglossa fuciformis* (common), *M. bombyliiformis* (one specimen rather worn), and *Macaria liturata*; 22nd, *M. fuciformis*, *Lithosia mesomella*, and *Amphidasys betularia*; 23rd,



*Lithosia rubricollis*, *Venilia macularia*, *Tanagra chærophyllata*, and *Sphinx ligustri*, hovering around rhododendrons at dusk; 24th, *M. fuciformis*, *M. bombylifformis* (in extremely bad condition), *Nemeophila russula*, *Bombyx rubi*, and *Drepanula falcula*; 25th, *N. russula*, *D. pudibunda*, *L. rubricollis*, *Lycæna trifolii*, *D. falcula*, *Diphthera orion* (two at sugar), and *Argynnis adippe*; 26th, *Euchelia jacobææ*, *Aplecta herbida* (one at sugar); 27th, *Zygæna trifolii* and *Argynnis adippe*. I also found the following larvæ:—*Liparis monacha*, *Amphidasys prodromaria*, *Cymatophora ridens*, and *Thecla quercus*, on oak; *Geometra papilionaria*, on alder; *Apatura iris* (one full-grown specimen on May 25th, which turned into the chrysalis state on the 29th, and from which a beautiful male emerged on June 15th), *Smerinthus ocellatus*, *Notodonta ziczac*, and *Vanessa polychloros* (common), on sallow; the last named was also common on the elm trees round Lyndhurst and Brockenhurst; and *Macroglossa fuciformis*, twenty-two larvæ on May 27th, feeding on scabious; one full-grown, two more in the last stage, and the others of various sizes. Sugaring was a complete failure, only eight moths being taken in six nights.—GEO. RICHARDSON; 19, Avondale Road, Peckham, S.E., June 19, 1893.

*Kent*.—On Whit-Monday last a male *Colias hyale* was taken by one of the Messrs. Davis, of Hythe Street, Dartford. It was flying near the railway station in that town, and is in tolerable condition, but has evidently hibernated.—E. SABINE; Erith, June, 1893.

*Middlesex*.—In May I took a cocoon of *Zygæna filipendulæ*; the moth emerged a few days ago. This is the only specimen of *Z. filipendulæ* I have ever taken in this neighbourhood. Of other day-flying moths, *Tanagra atrata* has been particularly abundant here, but *Euclidia mi* less common than usual. I have lately seen a specimen of *Detopeia pulchella*, which was captured on the railway bank near Barnet last June.—R. DYMOND; Ferney House, Southgate, N., June 19, 1893.

*Surrey*.—On the 15th June I observed a specimen of *Orgyia antiqua* flying in this neighbourhood, and another this afternoon in Clapham Park. The extraordinary continuance of dry and warm weather has brought out many species a month or six weeks earlier than usual. I never remember having seen this species on the wing before the end of July. I have been trying sugar, and failed; the honey-dew prevents anything coming to it, I suppose.—SAMUEL STEVENS; "Loanda," Beulah Hill, Upper Norwood, June 17, 1893.

At Dorking, on June 4th, I had the good fortune to come across a newly emerged female *Stauropus fagi* at rest on a beech tree.—G. RICHARDSON; 19, Avondale Road, Peckham, S.E., June 19, 1893.

*Wales (South)*.—The long continuance of hot, dry weather has made the season here an unusually early one. *Argynnis euphrosyne* was out near here on April 5th. On April the 19th I saw the first *Euchloë cardamines*; also several *Pararge megæra*, *P. egeria*, *Nisoniades tages*, &c.; three days later I found *Aspilates citraria*. On looking back to my notes, I see the first of this insect I took last year was on May 25th. Many of the common June insects I have taken during May, as, for instance, *Xylophasia rurea*, *Hepialus humuli*, *Plusia chrysitis*, &c.; in fact everything seems a month earlier than usual. *Argynnis paphia* and *A. aglaia* have been on the wing some time; one of the latter, which I took the other day, was quite worn. I never remember to have seen *A. paphia* here earlier than the second week in July. Sugar, so far, has been a failure.—SPOTSWOOD GRAVES; Victoria Street, Tenby, June 17, 1893.



**PLUSIA MONETA AT DORKING.**—I have the pleasure of informing you that, on the evening of 29th May, I took in my garden an example of *Plusia moneta* in excellent condition.—FREDERICK HOOD; Denfield, Dorking, June 12, 1893.

**PLUSIA MONETA AT TUNBRIDGE WELLS.**—This insect seems to have become a resident here, as my friend Dr. Francis Jaffrey captured two specimens at light in the middle of the town on the 19th and 24th inst.; and my son took another on the 26th inst., in the same garden where I took five specimens in 1890 and 1892. The three taken this year here are very small.—R. A. DALLAS BEECHING; Tunbridge Wells, June 27, 1893.

**SPHINX PINASTRI IN SUFFOLK.**—I have taken six more *Sphinx pinastri* in the same fir woods as last year, and nearly in the same position in the wood.—RENDLESHAM; Rendlesham, Woodbridge, June 13, 1893.

**ACRONYCTA ALNI IN APRIL.**—On April 10th I had the pleasure of breeding a splendid female specimen of *Acronycta alni* from a pupa found here last autumn in the decayed wood of an ash tree, growing near a hawthorn hedge, upon which the larva had probably fed.—CHAS. BARTLETT; Branscombe, Woodstock Road, Redland, Bristol, June 9, 1893.

**CAPTURES AT WEST WICKHAM.**—Whilst staying at West Wickham on the 22nd May last, my friend Mr. Ilstonbox and I had the good fortune to take three specimens of that lovely insect *Cymatophora fluctuosa*. Two of these were in perfect condition, whilst the third was decidedly worn. We took them at rest about mid-day from trees on the little patch of ground in the woods, which is known as "Glebe-Land." Amongst other things taken were *Ephyra trilinearia* (3), *E. punctaria* (1), *Corycia temerata* (1), *Macaria notata* (in abundance), *M. liturata* (3), *Fidonia piniaria* (a regular nuisance, all males but one), and *Notodonta camolina* (1). On the following Sunday, the 4th of June, I took in precisely the same spot two specimens of *Boarmia roboraria*, and about a dozen *Tephrosia extersaria*.—F. J. ROBINSON, Jun.; Surrey Cottage, Water Lane, Brixton, June 13, 1893.

**ERRATUM.**—Page 197, line 10 from bottom, for Ambresburg read Ambresbury.

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## SOCIETIES.

**ENTOMOLOGICAL SOCIETY OF LONDON.**—June 7th, 1893.—H. J. Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. George Willis Kirkaldy, of St. Abbs, Worple Road, Wimbledon, S.W., was elected a Fellow of the Society. Mr. W. C. Boyd exhibited varieties of *Fidonia piniaria* and *Thecla rubi*, taken at Bournemouth on May 20th, 1893. Mr. C. O. Waterhouse exhibited certain large galls on oak-leaves from Mexico, one of which was apparently produced by a species of Cynipidæ. Mr. A. Cowper Field exhibited varieties of *Smerinthus tilia*, bred between 1890 and 1893, under varying conditions of temperature, those which had been exposed to a lower temperature being much darker than those which had been exposed to a higher. Mr. Merrifield made some observations on the subject, and remarked that, as far as his experience went, no hard and fast rule could be laid down with regard to the production of the lighter or darker colourings, as a high temperature sometimes produced dark forms. Mr. W. M.

Christy exhibited a series of *Zygana trifolii*, including very many yellow forms, all, with one exception, taken at one spot during the latter half of May, 1893, and belonging to one colony. Some of the specimens were more or less incomplete, both in structure and colour. Lord Walsingham, Mr. Merrifield, and others took part in the discussion which followed. Canon Fowler exhibited cocoons and specimens of *Coniatus suavis* var. *chrysochlora*, Luc., taken by Lord Walsingham in great abundance on the flower-shoots of tamarisk in the West of Italy. Mr. Chitty exhibited black varieties of the following Coleoptera from the slopes of Ben Cruachan, N.B.:—*Carabus violaceus* and *arvensis*, *Pterostichus versicolor*, *Phyllopertha horticola* and *Telephorus figuratus*, and stated that the latter seemed a permanent race, as it occurred both in 1892 and 1893. The President remarked on the great abundance of *Coleophora laricella* in Gloucestershire, and stated that they were committing great ravages among young larches. Lord Walsingham stated that he had seen young larches at Carlsbad completely bleached by this moth. It was suggested by several Fellows of the Society that care should be taken to observe the occurrence of second broods of insects during the year. Mons. Wailly exhibited a collection of Lepidoptera, Coleoptera, and Orthoptera from New Zealand. A discussion followed, in which Lord Walsingham, Dr. Sharp, Mr. McLachlan, Mr. Durrant and others took part. Mons. Wailly further exhibited cocoons of various silk-producing Lepidoptera, and stated that the larva of *Attacus pernyi*, whose food-plant is oak, had been reared in Trinidad on *Terminalia latifolia*.—W. W. FOWLER, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Thursday, May 25th, 1893.*—The President in the chair. Mr. Adkin exhibited a bred series of *Cidaria suffumata*, Hb., from Forres, with bred series from Dover and Box Hill for comparison; also a bred series of *Lobophora carpinata*, Bork. (*lobulata*, Hb.) from Rannoch, including one extreme banded form, with southern series for comparison. Mr. Gerrard, a specimen of *Syrichthys malvæ*, L. (*alveolus*, Hb.), var. *fritillum*, W. V., from Epping. Mr. C. G. Barrett, a box containing more than twenty species of the Psychidæ, from the Continent of Europe, and especially desired to gain further information with regard to these little-known and obscure insects. He stated that the larvæ lived in cases, after the manner of the *Coleophora*, on fir, furze, heath, grass, and the lichen of trees, rocks, and bushes; and that many entomologists considered them to be Bombyces, not Tineina. Mr. Weir remarked that all the species seemed excessively local, and gave his experience with *P. villosella*, Och., stating that the female did not leave the case, that the eggs were laid and hatched within this shelter, and that most likely the first meal of the young larvæ was the body of their mother. Mr. West, of Streatham, on behalf of Mr. Trenerry, male and female of *Pieris daphidice*, L., captured by a boy at Plymouth; also a specimen of *Smerinthus tilia*, L., in which the rosy tint was very strongly developed, making a very beautiful variety. Mr. Turner, a long series of *Hybernia leucophaæaria*, Schiff., from varieties with but few markings on a light ground, to forms which were very dark with the transverse lines obliterated, selected from various localities near south London; a specimen of *Panolis piniperda*, Panz., from Westerham, in which green was the prevailing colour; also hibernated specimens of *Pterophorus monodactylus*, L., taken on Feb. 18th in this year. Mr. Warne, a nodule of kauri gum from New Zealand, enclosing a large Longicorn beetle. Mr.



Weir, a species of Hippoboscide taken from an exhausted house-martin (*Chelidon urbica*), most likely *Stenopteryx hirundinis*; also a mass of eggs and young larvæ from the wild rose (*Rosa canina*), which appeared to be those of *Hemerophila abruptaria*, Thunb. He earnestly requested members to make notes of all unusual occurrences during the present phenomenal season, and report to the Society the results of their observations and experiences. Mr. Adkin remarked that a considerable number of species had appeared in his breeding-cages which had been two years or more in pupa. Mr. Perks, a large specimen of a Polyporus, full of coleopterous larvæ, taken at the Society's field meeting at Horsley. Mr. Turner then read the report of the Society's field meeting at Horsley on May 13th, which had been most successful and enjoyable.—HY. J. TURNER, *Acting Secretary*.

June 8th.—J. Jenner Weir, F.L.S., President, in the chair. Mr. F. W. Frohawk exhibited a variety of *Melitæa aurinia*, Rott., a most remarkable form, especially on the under side, the normal orange-tawny colouring being replaced by a fulvous-brown, and the markings of the outer half of the secondaries being almost entirely missing; also a somewhat similar aberration of the same species on behalf of Mr. Carpenter. Mr. H. A. Auld exhibited a specimen of *Spilosoma urticae*, Esp., in which the usual row of black spots down the centre of the body were absent; also a bred series of *Phibalapteryx vitalbata*, Hb. Mr. R. Adkin showed a splendid box of *Asteroscopus nubeculosa*, Esp., from Rannoch, bred in 1893, two being from larvæ fed up in 1890, and the remainder in 1891, Mr. Adkin stating it was not an uncommon thing for this species to remain two years in the pupa. Mr. Weir referred to the view held by some, that certain species resisted any forcing when pupæ, and instanced the second brood of *Pieris napi*, L., in this respect, Mr. Barrett stating it was of the utmost importance that a species like *A. nubeculosa* should have the power of delaying their emergence, if the weather be too unfavourable. Mr. Weir exhibited a specimen of *Aporia crataegi*, L., one of four taken by him in the early part of June, 1839, at Keymer, Sussex, it being then abundant. In 1840, in the same locality, he saw but one; and in subsequent years none at all. This specimen he generously placed in the Society's collection. Mr. Weir also said that large numbers of this species, bred from continental pupæ, had been liberated in the neighbourhood of Windsor. Mr. Frohawk recorded the extraordinary fact of *Limenitis sibylla*, L., having been taken in the New Forest, on the 22nd May.—F. W. HAWES and H. WILLIAMS, *Hon. Secretaries*.

Field Meeting.—On Saturday afternoon, June 10th, an excursion was made to Oxshot, under the guidance of Mr. R. South. The railway is very convenient for this spot, as it lands one right on the collecting-ground. Turning to the left after leaving the station, the members quickly dispersed, and among the scattered fir and birch trees *Eubolia plumbaria* was noted in fine condition; *Epinephele ianira*, *E. tithonus* *Ctenonympha pamphilus*, *Syrichthus malvæ*, and one or two *Lycæna ægon* represented the Rhopalocera. From the heather *Ematurga atomaria*, which has been about so long this year, a few *Aspilates strigillaria*, and an odd specimen of *Nemeophila russula* were disturbed; while the denser portion yielded *Cabera pusaria*, *Acidalia remutaria*, *Asthenia candidata*, *Camptogramma bilineata*, and *Lomaspilis marginata*. In this part of the heath the sundew (*Drosera rotundifolia*) flourished, and many patches of the parasitical dodder (*Cuscuta epithymum*) were seen. On entering the fir-woods proper, going north, members were astonished at the vast numbers of



*Bupalus piniaria* and *Thera variata* which the beating-stick produced, many of the former being in fine condition. On the trunks *Scoparia dubitalis* and *S. truncicolella* were present, one *Ellopia prosapiaria*, a few *Macaria liturata*, in fine condition, and plenty of *Eupithecia indigata*, almost unrecognizable. *Iodis lactearia* was flying, and *Retinia pinivorana* was reported. Specimens of the coleopterous family Coccinellidæ were observed in all four stages, the pupa stage of *Coccinella oblongo-guttata* being especially noticeable, both for its striking colours, and its power of suddenly standing at right angles to the trunk of the tree when disturbed. At length we reached a hedge bordering the fir-wood, and here *Aplecta nebulosa* and *Melanthia albicillata* were taken from the trees, full-fed larvæ of *Panolis piniperda* were beaten, and *Melanippe montanata*, *M. sociata*, *Larentia viridaria*, and *Ebulea sambucalis* were driven out, while *Tortrix viridana* was certainly there. Turning sharp to the left, we reached a damp situation where the bog myrtle (*Myrica gale*), so attractive to Lycænidæ, grows with the marsh violet (*Viola palustris*) and the pennywort (*Hydrocampa vulgaris*). Here *Cataclysta lemnata* and *Hydrocampa nympheata*, with a solitary specimen of *Leucania impura*, were obtained. Farther on a beautiful piece of undergrowth was reached, which with the adjoining palings produced considerable numbers both of species and specimens. *Melanthia ocellata*, *Phorodesma pustulata*, *Tephrosia punctularia*, among the Geometers, and *Triphæna pronuba*, *Noctua c-nigrum*, *Agrotis exclamationis*, *Xylophasia monoglyphæ*, among the Noctuæ, were added to our list. A solitary specimen of *Drepana cultraria* was taken, and among the Micros *Pædisca bilunana*, *P. corticana*, *Eupæcilia nana*, and *Elachista argentella*. Many species found before were present, here again including a number of fine specimens of *Melanthia albicillata*. The road was now reached, and the party turned for tea. The walk produced *Coremia designata*, on trunks; a single *Eupisteria oblitterata*, from stunted alders; and a nest of *Bombyx neustria*, strange to say, feeding on birch. After a pleasant tea at the porter's cottage, we rambled over the heath, taking abundance of *Pempelia palumbella*, with *Eupithecia nanata* sparingly, and one or two *Hadena porphyrea*. *Acidalia subsericeata* was taken in some numbers just at dusk. Many thanks are due to Mr. Lewcock, who although he lost the proper train and did not join the party till the return journey, has kindly supplied the following notes on the Coleoptera:—"I started to meet the 2.17 train, but just missed it by two minutes. Under the circumstances I decided to take the next train to Surbiton and walk round by the fields through Claygate to Oxshot and collect by the way. I arrived at Surbiton at 3.15, and turned to the left coming out of the station, making for the footpath which skirts the railway bank, and eventually turned into Claygate Lane. Having on one occasion seen a specimen of *Megapenthes lunicollis* taken almost under my nose in this lane, I began working for it, but without success. However, I found a single *Mordellistena humeralis*, sitting on *Heracleum* flowers; and I may here record that I also obtained one on June 20, 1891, at the Eynesford excursion. In other Umbelliferæ I found several *Grammoptera tabacicolor*, a species common to this locality. In elder blossom one *Quedius cruentus*, which occurs sometimes under bark, but only singly. Also several *Anthocomus fasciatus*, a pretty little red-and-black malacoderm which is frequently found during June at Claygate. By using the sweeping net among the meadow plants, several *Ceuthorrhynchus campestris* and *Prasocuris aucta* turned up, with a few *C. cochleariæ*, *Gymnetron pascuorum*, and several others. All

these are common to the locality. Of course one meets with many species over and over again by working at one place, and it would be quite useless to record all the species found here; for instance, I met with ten species of *Telephorus*, and with the exception of *T. fuscicornis* and *T. discoideus* all are common. It may be worthy of remark that at Eynesford, in 1891, *T. fuscicornis* was the commonest of the group in that district. Another very common beetle on birch, hornbeam, and a variety of things at Claygate is *Luperus betulinus*, and common enough it was on Saturday, falling literally in hundreds into the umbrella. The Black Pond was reached soon after 7 o'clock, but nearly all the Donaciæ had retired for the day, so that only *D. sericea*, with the intermediate forms to *D. comari*, were to be obtained. *Athous niger* and *Goniocetena viminalis* were beaten from sallow, as also was *Crepidodera helxines*. Two or three *Coccinella ocellata* were found on the reeds, and one or two *Erirrhinus nereis*. The final capture was a nice specimen of *Cryptocephalus lineola*, making the third captured at this spot by myself. A great many odd and common things put in an appearance, such as *Adimonia caprea* and *Strophosomus limbatus*, but the captures are all decidedly uninteresting." So ended another very successful and enjoyable field outing of the Society. The next meeting will be at Westerham, Kent, on July 15.—HENRY J. TURNER.

NORTH LONDON NATURAL HISTORY SOCIETY.—On Friday, May 19th, 1893, the N. L. N. H. S. made their annual excursion to the New Forest. Nine members started; most of them left Waterloo by the 5.50 p.m. train, reaching Lyndhurst Road about 9 o'clock. Thence they went on by omnibus to Lyndhurst, and, dismounting at the 'Crown,' walked about a quarter of a mile to a pretty little cottage on the Brockenhurst Road, known as Lynwood, the recognised head-quarters of the "North London" in the New Forest. Here we received a warm welcome from our worthy landlady, Mrs. Axford, of whom, as regards making her visitors comfortable on the most reasonable possible terms, we cannot speak too highly; and having enjoyed a hearty supper, retired early to bed. On the following morning, Messrs. Battley and Tremayne opened the campaign by working Lyndhurst fences from 5 to 6 a.m. They only obtained one *Lobophora halterata*, and a larva of *Vanessa polychloros* about to pupate. After this, being joined by Mr. Bacot, they started beating up Beechen Lane to see what was about. It soon became evident that if imagines were scarce, larvæ were very much the reverse. *Asphalia ridens*, in swarms; *Thecla quercus*, in good numbers; *Gonopteryx rhamni*, *Miselia oxyacanthæ*, *Psilura monacha*, *Hybernina aurantiaria*, *Nyssia hispidaria*, *Phigalia pedaria*, and one specimen of *Geometra papilionaria*, fell into Mr. Bacot's beating-tray. The day was rather dull, and not many insects were on the wing; so, after breakfast, the whole party started larva-beating, and, in addition to the above, brought down single specimens of *Agriopus aprilina*, *Catocala promissa*, *Asphalia diluta*, and *Pecilocampa populi*; together with several *Hybernina leucophaæaria*, *H. rupicaprararia*, *Himera pennaria*, *Eupithecia abbreviata*, *Amphidasys strataria*, and *Boarmia roboraria*. *Asphalia ridens*, as I mentioned before, were in very unusual numbers; you could be almost sure of getting several off every oak bough. *Psilura monacha*, I may remark, we seemed to beat off everything; we certainly beat it off oak, beech, birch, and hazel, which was a surprise to me, at any rate; I had no idea the larva was such a general feeder. We also beat a great many larvæ which we could not name; whilst the larvæ of *Taniocampa stabilis* and *Calymnia trapezina* were a perfect



pest. A great many *Brephos parthenias* and *Asphalia flavicornis* were also obtained from the birch; the latter (which join two leaves together and spin between them) more by searching than by beating. When we were tired of larva-beating, we made for that magnificent clump of beeches, known as Denny Wood, to work the trunks for *Stauropus fagi* and the "prominents." Messrs. Smith and L. J. Tremayne arrived there about mid-day, but an hour's hard searching only produced a couple of *Lophopteryx camelina*, one *Tephrosia consonaria*, one *T. punctularia*, and several *Dasychira pudibunda*, which was common all over the forest. The inevitable larva of *Asphalia ridens* still turned up, Mr. Tremayne finding two crawling up the beech trunks; and of course *T. stabilis* and *H. trapezina* were common as usual. At about a quarter-past one we sat down to a bread and cheese lunch under the beech trees, after which it came on to rain. We worked the trunks under umbrellas for a time, but were soon forced to give it up. On the trunks we found one or two pupæ of an *Argynnis*, probably *paphia*, but possibly *adippe*, as I do not know the difference between these two pupæ. Presently the others of the party arrived. They had found *Euclidia glyphica* flying in some numbers over the heath; and Mr. Bacot had turned up a "nest" of *Vanessa polychloros* on a sallow bush, containing about a hundred larvæ, to which all the party helped themselves freely. Mr. Bacot had also found a pair of *Notodonta chaonia*. Rain kept us idle for a time, but it cleared up about 4 o'clock, and we were able to resume working the tree trunks, with the result that Mr. Rose found another *Tephrosia consonaria*, Mr. Tremayne found another *Lophopteryx camelina*, and Mr. Bacot found a pair of *Notodonta trepida* in cop. We returned to Lyndhurst *viâ* Matley Bog, beating a great number of the larvæ of *A. flavicornis* and *B. parthenias*. At tea we were joined by Mr. Oliver C. Goldthwaite, who came in very useful in naming a great many of our larvæ, and giving hints as to rearing them. After tea we tried "sugaring" in Hurst Wood, but it was an utter failure, the only captures being two *Moma orion*, one *Aplecta herbida*, and one *Hadena thalassina*. Dusk on the heath beforehand was not much better, as, except for a *Boarmia consortaria* which Mr. Battley took, it produced only common Geometers. On the following morning, Mr. Tremayne worked the fences alone; he only obtained one *Acidalia trigeminata*, but discovered another nest of *Vanessa polychloros* up a high elm tree. After breakfast, accordingly, the members "went for" that elm. A long piece of string was procured, and a stone tied on to the end of it, which was then thrown over the bough. The bough was then shaken with force, and the *V. polychloros* larvæ descended rapidly into umbrellas spread carefully out to receive them. When all the members had had enough, the bough was abandoned, and the party set out for the work of the day, which it had been decided to devote to *Nemeobius lucina*. Accordingly, we walked straight along the Brockenhurst Road, without stopping to collect, and, striking off to the left just before Brockenhurst, made straight for the well-known *lucina* ground. The three spots for *lucina* were worked one after another. The day was fine and bright, and the common butterflies and day-flying moths were on the wing in good numbers. In the first *lucina* glade, *Lycæna icarus*, *Cænonympha pamphilus*, *Polyommatus phleas*, *Argynnis euphrosyne* (worn) and *A. selene* (splendid), *Syrichthus malvæ*, *Nisoniades tages*, and *Hesperia sylvanus* were very plentiful; nor were they, as might have been expected from the early season, all in bad condition, as, though some were extremely worn, others were



equally fresh. *N. lucina* flew occasionally in the sunshine, and all our members succeeded in obtaining some. We also turned up *Euclidia mi* and *E. glyphica*, *Panagra petrarica*, the common "carpets," and many other common Geometers. Hybernated *Gonopteryx rhamni*, of both sexes, were also common, but they really were "rips," and not worth taking. Just before leaving the glade, Mr. Battley managed to net a specimen of *Macroglossa fuciformis* on the wing. In the second glade very few *N. lucina* were taken; but several gentlemen took *Thecla rubi* in fair condition. After lunch the party divided, Messrs. Battley, Goldthwaite, Quail, and Rose, going straight home *viâ* Stubby Copse. They did hardly any collecting on the way, and only found two more nests of *Vanessa polychloros*, which, being already satiated with this larva, they scarcely touched. Messrs. Smith, Robbins, and L. J. Tremayne, in the meantime, went round by the railway line to work for *Macroglossa bombyliiformis*. During their walk of rather over a mile along the line, they succeeded in obtaining a few worn specimens of this species. Several were flying about, and occasionally they stayed hovering over the flowers of the scabious (which I am told they feed on), when of course they were easily captured. One *M. fuciformis* was also taken; and *Euclidia glyphica* was still on the wing. Messrs. Smith, Robbins, and Tremayne subsequently returned home *viâ* Stubby Copse, Denny Bog, and Denny Wood. Sugaring was tried again in the evening, with no more success than on the previous night. The sole captures were one *Moma orion*, one *Acronycta rumicis*, one *A. psi*, and one *Agrotis exclamationis*. Dusking on the heath beforehand was a little better, producing *Lobophora halterata*, *Drepana falcataria*, *Boarmia consortaria*, *Lithosia sororcula*, and *L. mesomella*. On Monday morning most of the members rose late, and no fence-work was done. We were, however, all out by 10 o'clock, and decided to make for Rinefield for *Macroglossa fuciformis*. We took our way through Hurst Wood, in which we threw up sticks, &c., into the high oaks to try and dislodge *Gnophria rubricollis*; but though we caused several to fly, they declined to come down, and we soon found that our best plan was to search the bracken, on which several were taken. Mr. Robbins also found a *Boarmia consortaria* on one of our sugar-patches of the night before; and Mr. Smith found a full-fed larva of *Limenitis sibylla* on the honeysuckle. On reaching Rinefield we found the glorious rhododendron avenue already tenanted by about twenty nets, which were steadily working the rhododendrons up and down. Fortunately, however, *Macroglossa fuciformis* was plentiful, and all the party succeeded in obtaining some; Mr. Rose also taking a specimen of *M. bombyliiformis*, which is very uncommon here. We left the avenue early, in view of our approaching departure, and got back to Lyndwood in good time, only taking one or two more *Gnophria rubricollis* on our way back. We left the forest that evening by a train leaving Lyndhurst Road about 7 o'clock, and reached Waterloo at a quarter to 11, having spent a most enjoyable time. The larvæ were undoubtedly the chief feature of the excursion, but we had taken plenty of good imagines also. Amongst others which I have mentioned above, specimens were also taken of *Tephrosia extersaria* (fairly common), *Venilia macularia*, *Cherocampa elpenor* (seen, but not taken, round sugar), *Macaria liturata* (beaten out of pine), *Thera variata* (beaten out of pine), *Eupithecia rectangulata* (one or two off the fences), *Anaitis plagiata* (one taken by Mr. Bacot off a fence on the Saturday morning), *Ematurga atomaria* (very common over the heath), *Eupisteria oblitterata* (one), *Bupalus piniaria* (common amongst the pine), *Eubolia plumbaria* (a few), *Tephrosia biundu-*

*laria* (several), *Pieris brassicae*, *P. rapae*, *P. napi* (all three, of course, common everywhere), *Euchloë cardamines* (common in the fields, lanes, &c.), *Bapta bimaculata* (a few at dusk), *B. temerata* (a few at dusk), *Epione advenaria* (one), *Eurymene dolobraria* (one or two), *Acidalia remutaria* (very common), *Melanippe sociata*, *M. montanata*, and *M. fluctuata*, *Cabera pusaria* (common), *Cidaria truncata* (one or two), *Camptogramma bilineata*, *Amphidasys betularia*, *Lomaspilis marginata* (one or two), *Bombyx rubi* (very plentiful over the heaths), *Zonosoma linearia*, and *Iodis lactearia*. *Pechypogon barbalis*, and *Zanclognatha grisealis* and *Z. tarsipennalis*, were also very plentiful. The weather on the whole was good. The first day was dull, and we had some rain, as I have mentioned above; but the last two days were quite fine, warm, and bright. The only disappointing part of the business was the sugar, and that only corresponds with almost every other experience in that direction I have heard of this year. It is to be feared that this year is likely to prove as bad a year for sugaring as last one was the reverse. As for the remarkable mixture of the seasons, it may be illustrated by the fact that, whereas, on the Saturday Mr. Tremayne took a *Taniocampa stabilis*, in fair condition, off a tree trunk, on the Sunday following, Mr. Smith took a perfect *Argynnis adippe* in Stubby Copse. I have since learnt that, on the Whit-Monday, Mr. F. W. Frohawk saw the imago of *Limenitis sibylla* at Lyndhurst.—L. J. TREMAYNE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—May 15th, 1893. Mr. R. C. Bradley in the chair. Mr. G. W. Wynn showed *Acherontia atropos*, from Cannock Chase. Mr. A. H. Martineau said that at Solihull a specimen of *Sphinx ligustri* had entered a hive and been killed by the bees. The bees then, unable to remove so large a body, had covered it up with wax. The Secretary announced the receipt from Mr. John Willis, of Edgbaston, of a handsome present of books (about forty volumes), &c.; and a cordial vote of thanks was passed to Mr. Willis for his kind gift. An excursion was made to the Cotswolds at Whitsuntide, when, under the kind guidance of Mr. Frank Stephens, of Ebley, a pleasant three days were spent in the neighbourhood of Stroud, by the few members who went. *Lycæna adonis* and *Ino geryon* were common amongst the Lepidoptera, and a number of interesting Diptera and Hymenoptera were taken. Probably the best capture was *Cheilosia chrysocoma*, one of which was taken near Painswick. —COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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## RECENT LITERATURE.

*The Hemiptera-Heteroptera of the British Islands: a Descriptive Account of the Families, Genera, and Species indigenous to Great Britain and Ireland, with Notes as to Localities, Habitats, &c.* By EDWARD SAUNDERS, F.L.S. London: L. Reeve & Co. 8vo, pp. vi, 350, pls. 32.

SLOWLY and surely the once "neglected Orders" are attracting the attention which was denied to them after British entomologists gave up the earlier practice of collecting all Orders of insects, and became exclusively Lepidopterists or Coleopterists, as the case might be. To Messrs. Douglas and Scott is due the credit of the revival of the study



of Hemiptera-Heteroptera in England, and their work on the subject, published by the Ray Society, well illustrated, as the Ray Society's publications always are, did good service in its day.

But the Ray Society's publications are not always easy to obtain, and our knowledge of British Hemiptera has largely increased since 1865; and therefore Mr. Saunders has rendered considerable service to science by the production of this handsome volume, which originally appeared in parts. The introduction includes general matter on the characters, structure, and habits of the Sub-Order, with notes on collecting, habits, &c., and a table of families. Each family has a table of sub-families or genera, and each genus a table of species, so that the ambiguity so often felt by those who commence the study of a new group, from want of well-defined characters in a convenient form, cannot occur here. A large number of species (if not all) are figured on the plates, and full information respecting localities, &c., is given in the text; and the work closes with a good alphabetical index. The book appears to have been very carefully worked out, and the principal Continental authorities have been freely consulted; but yet there are one or two deficiencies which we regret to notice. Firstly, there is no reference to the figures in the text, nor any index of plates except the explanation opposite to each. Secondly, there should have been a systematic index of families at the commencement of the book, in addition to the alphabetical index at the end. Now that alphabetical indices are very properly deemed indispensable to a book, we fear that there is sometimes a tendency to neglect giving a table of contents, which is, however, often almost as necessary for comfort and convenience in using a book as an alphabetical index itself. And there should have been a short list of the plates, showing at least on which plates the principal families were represented.

We are glad to see that this work has received so much encouragement that Mr. Saunders has already announced one of similar character on the Hymenoptera Aculeata. This is even more wanted, as we have no good illustrated works on this group of insects of recent date on our British species; notwithstanding that the Ants, Bees, and Wasps are among the most interesting of all insects. We hope Mr. Saunders may bring this new venture also to an equally successful conclusion.

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*Catalogue of British Coleoptera.* By D. SHARP, M.A., F.R.S., &c., and W. W. FOWLER, M.A., F.E.S., &c. 46 pp. 8vo. London: L. Reeve & Co. 1893.

DURING the past ten years or so the coleopterists of this country have for the most part used either Dr. Sharp's Catalogue, or that of Canon Fowler and the Rev. A. Mathews, the chief points of difference between these two lists being rather in the arrangement than in the nomenclature. The present work is more complete than either of its predecessors, and as it is the outcome of the joint labour of two acknowledged authorities, it will certainly be accepted, by all who are interested in the Coleoptera of the British Islands, as the standard list of the future.



# THE ENTOMOLOGIST.

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## AN ENTOMOLOGIST'S JUBILEE.

By W. F. KIRBY, F.L.S., F.E.S., &c.

PROFESSOR GRAVENHORST, the author of a great monograph on the Ichneumon Flies ('Ichneumonologia Europæa'), one of the most difficult and extensive groups of insects, was born at Brunswick in 1777, and died in 1857 at Breslau, as Professor of Natural History, and Director of the Zoological Museum of the University; in addition to which he held the rank of Privy Councillor. He studied at Helmstadt and Göttingen, and took his Doctor's degree at the former place in 1801; and in 1811 he was appointed Professor of Natural History at the University of Frankfort-on-Oder, which, however, was transferred to Breslau in the same year, where he continued his scientific work for the rest of his life.

On August 7th, 1851, the fiftieth anniversary of his doctorate was celebrated at Breslau. The Curator of the University, Upper Privy Councillor Heinke, and deputations from the Senate, and from the Philosophical and Medical Faculties, assembled at Prof. Gravenhorst's house, where Herr Heinke invested him with the Order of the Red Eagle of the third class, with the sash, on behalf of the King of Prussia. The deputations then congratulated the Professor on the occasion; and he received a renewal of his Doctor's diploma from the Philosophical Faculty of the University of Göttingen, and the honorary degree of Doctor of Medicine from the Medical Faculty of the University of Breslau. Rector Barkow presented Prof. Gravenhorst with a congratulatory address, and with a new work, 'Zootomische Bemerkungen,' which he had just dedicated to him in honour of the occasion. Other addresses were then presented from the students of the University, the Silesian Society for National Culture, and the Entomological Society of Stettin.

In the afternoon the festivities terminated with a banquet, at which several congratulatory poems were recited. One of these,

by Dr. Cohn, was included in the account of the proceedings published in the local paper at the time, and is of more than passing interest. It was set to the tune of a well-known German song, commencing, "When Noah came out of the ark," which may have been composed by Gravenhorst himself, who appears to have been an extremely versatile man; for I find that he is stated to have composed a poem called "Father Noah," which may be the same.

The translation of Dr. Cohn's ode here given (to which the foregoing observations are merely introductory) is as literal as possible, and may be trusted to give a faithful representation of the original. It has probably never appeared in English before; and even the original German is likely to be known to very few.

#### DR. COHN'S ODE ON PROF. GRAVENHORST'S JUBILEE.

"When the Lord, the God of Nature,  
Had created every creature,  
These in Adam's view he placed,  
Who should name them to his taste;  
And what he called both great and small,  
Henceforth should be the names of all.

Adam soon his task began,  
Named the beasts in wood that ran,  
Birds that fly, and fish that swim;  
Easy was the work to him;  
And all he classed that met his view,  
In genera and species too.

When at length his work was done,  
He gave their names to every one,  
And his system, as I hear,  
Was simple, natural, and clear.  
Thus without much toil, was he  
Founder of Zoology.

But when he to the insects came,  
His flagging energy grew lame;  
So many species, and so small!  
It was no joke to name them all;  
And Adam said, 'I'll do no more;  
I think I'll leave the rest to Noah.'

What creeps and flies was on the list  
Of Noah, the Entomologist;  
The Diptera, Orthoptera,  
Hemiptera, Neuroptera,  
The butterflies and beetles all,  
And nothing was for Noah too small.

But the Ichneumons, as he found,  
Were like a sea without a bound ;  
' This group is too confused,' said he ;  
' I find it much too hard for me ;  
How to determine this mass well,  
Not Cuvier could, nor Linné tell.'

But Gravenhorst at length was born,  
To darkness now succeeded morn ;  
The chaos left by former men,  
He brought into a system then ;  
And the Ichneumons first were known  
Completely, through his work alone.

But howsoe'er the work was tough,  
His energy had not enough ;  
Whate'er lays eggs, or suckles young,  
Whatever crept, or flew, or sung,  
Whatever leaps or swims the flood,  
Has he compared, and understood.

The living things in ocean's tide,  
And those the drops of water hide ;  
He studied all with energy,  
But chiefly Entomology,  
Though worms and reptiles well he knew,  
And many other creatures too.

And what he knew, and thus could tell,  
He taught it to his pupils well ;  
Like grains of sand they throng around,  
And he who in their ranks is found,  
Goes well rewarded from the place,  
And thinks upon his friendly face.

Nature is kind, and loves him still,  
And gives him what she rarely will ;  
The strength of youth in green old age,  
A pride to Science, truly sage ;  
And whatsoever he has done,  
God's blessing always rests upon.

Fill, fill your bumpers to the brim ;  
Our worthy friend, we'll drink to him,  
The sage revered and loved by all,  
Who teaches truth, whate'er befall ;  
For fifty years he's laboured on :  
Cry, ' Gravenhorst, hurrah ! ' each one."

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## AMONG THE BUTTERFLIES IN CORSICA.

By R. S. STANDEN, F.L.S., F.E.S.

It had long been a favourite project of mine to visit some outlying province of Europe where the insect fauna should present strongly-marked characteristics, either tropical or arctic; and when my friend Mr. Albert Jones suggested Corsica, I rose to the bait like a hungry fish. A few days before that fixed for leaving England, my friend found that he must postpone his departure for another week, but Mr. G. C. Champion, also an old friend, kindly stepped into the breach, and at 11 o'clock on the morning of May 28th last we left Charing Cross for Marseilles, arriving at this southern metropolis in a blistering sun at 10.30 on the following morning. The packet for Ajaccio started at 4 o'clock the same afternoon, and by 6.30 on the morning of the 30th, after a passage of absolute tranquillity, we lay anchored in the broad harbour of the capital.

An amber haze still hung over the town, spreading itself along the overlapping hills that encircled it and ran on, range behind range, to the far end of the wide bay. The water was alive with small boats, hurrying up to secure the new arrivals. The process by which this is affected is by no means soothing to the nerves; eventually, however, we reached the quay, and there we had to force our way through a lot of swarthy ruffians who fought for our belongings as the boatmen had fought for our persons.

After depositing our effects at the railway station, we unfurled our "engins de chasse" and set out for a long morning's work along the coast. A grove of eucalyptus just outside the station reminded us that this side of the town has a reputation not wholly unconnected with fever, but the self-assertive *Opuntia vulgaris*, with its lovely orange tufts of bloom, and the aggressive blades of the *Agave americana* which lined the shore, awakened such reminiscences of another hemisphere in the breast of my companion, that the sun's vertical rays streamed down on him unobserved; at all events we soon forgot our proximity to the malarious Campo dell' oro, and stepped gaily aside into a cheery little dell, where it was clear that my net and my friend's little bottles would soon be brought into requisition.

A dusky and very hirsute form of *Epinephela*, which proved to be *ianira* var. *hispulla*, at once appeared in considerable numbers. Then, in succession, *Lycæna astrarche*, *L. icarus*, *Polyommatus phlæas*, with its dark ab. *eleus*, *Pieris brassicæ* and *rapæ*, large and strongly marked, *Papilio machaon* ab. *sphyrus*, *P. podalirius*, and one fine example of *Lybiathea celtis*. In the afternoon, on the north side of the town, in addition to some of the foregoing, I obtained several *P. daphidice* and two *Spilothyrus altheæ*.

At 4.50 we took train to Vizzavona, a mountain resort about three hours from Ajaccio and 4000 ft. above sea-level. The so-called "macchie" is with us nearly all the way. It is a mixture of low shrubs with which the slopes are thickly clothed up to about 3000 ft., the chief ingredients being *Erica arborea*, *Myrtus communis*, *Juniperus communis*, *Arbutus unedo*, a species of *Cytisus* no longer in flower, *Cistus monspeliensis*, and *C. albidus*, of the former of which Napoleon said he should know his native land with his eyes shut from the scent of this plant; and, indeed, wherever we went the air was filled with its aromatic perfume. Conspicuous also in the clearings is the stately *Asphodelus albus*, with its towering spike of white flowers; the more lowly but sweet-scented *Pancratium maritimum*, the ubiquitous *Cyclamen europæum*, and the large rose-coloured *Convolvulus althæoides*. We soon leave the olive and the ilex behind. They are replaced by chestnuts of enormous girth, then beech and the Lariccio pine, the former frequently growing at a higher altitude than the latter, and lastly, higher than either, *Juniperas nana* and a stunted alder. The line makes tremendous zigzags as we ascend, and it seems more than likely that we shall topple over into one of the little red-roofed villages so jauntily perched on a promontory beneath, or into the rushing torrent at its feet. As we near the long tunnel of Vizzavona, the scenery grows what the Teuton calls "wild-romantisch" to a degree. The kind of granite which prevails in this part of the island appears to be of a friable nature when exposed to the air, and the consequence is that the outlines of the mountains (which run up to 8000 ft. here) are often very rugged and fantastic in form, and their sides riddled with countless caves, which come in very handy for the bandits.

The Hôtel Monte d'Oro, on the Foce or Pass of Vizzavona, is about on a par, in accommodation and cuisine, with a small mountain hotel in Switzerland, but the climate is rather severe before the month of July, until which period the species of butterflies that occur there may almost be counted on the ten fingers. At no time indeed do Lepidoptera appear in anything like the abundance that one is familiar with in Switzerland or the South of France, and 40 species of Rhopalocera for the month of June seems a poor total. It was disappointing too to find oneself, on a still and cloudless day, in a perfect paradise of flowers, and brambles and sweet scents, and not a butterfly of any description on the wing; this was a common experience, and patience was the only cure for it. Occasionally things occurred in some abundance, and this was notably the case with *Cœonympha corinna* in the open spaces of the forest below the hotel; also with a beautiful form of *Lycæna argus*, in which the female has the wings deeply suffused with blue, probably the ab. *calliopsis* of Boisduval.



The first capture of *Papilio hospiton* was an event of some importance, and by a mere accident I was that fortunate captor. My friend Jones and I had strolled down one lovely morning, about June 15th, to Tattone, the first station from Vizzavona in the direction of Corte. We were just then intent on the new form of *L. argus* referred to above. We had each our favourite field for it, to the left of the high road just before reaching the village. *Hospiton*, though never entirely absent from our thoughts, was for the moment overshadowed by the less pretentious little stranger. Jones, on this occasion, had consented to enter my domain; in common courtesy I should have given him the *pas*, but a habit engendered by long legs and an eager temperament took me first over the wall, and there, almost at my feet, was the gorgeous *Papilio*, resting on a head of clover—a superb female, which I promptly and easily secured. The food-plant given by Lang and Kane is *Ferrula communis*, and a magnificent plant it is. At Vivario, about 2000 ft., it was at least 5 ft. high, with round flat-topped umbels of a dazzling Indian yellow; at Tattone, 500 ft. higher, it was not yet in flower. Generally speaking, perhaps it may be said that when a plant arrives at maturity, the insect whose larva feeds on it is already in a moribund condition, or approaching it; in other words, *ceteris paribus*, the higher the elevation the later the emergence of the imago. So, on the day following that on which I took the female *hospiton* at Tattone, Mr. Raine, of Hyères, took a fine male at the same spot; and Mr. Jones took a worn female the next day at Corte, 1200 ft. lower, and a worn male several days later at Tattone. These are probably the only captures of the imago in Corsica this year, but after we left several larvæ were taken, I am told, on a species of *Peucedanum*, the name of which has not yet reached me.

(To be continued.)

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## THE EARLY STAGES OF *THESTOR BALLUS*, FAB.

By F. BROMILOW.

ON the 29th of March last, I had the pleasure of receiving twenty-six eggs of *Thestor ballus*, taken the previous day on *Lotus hispidus*, at Hyères, by Mr. Frederick Raine. The species is, I believe, common there, though always very rare at other places along the South of France. These ova are shiny, round, considerably flattened at the poles, and in colour are pale pea-green. They are usually laid singly, on the upper surface of the leaves, or between the hairy calyces of the plant.

According to most authors, the species is stated as feeding



only on *Lotus hispidus*, but Rambur says the larva lives on "Herbaceous *Leguminosæ*," which would, I suppose, imply that *T. ballus* feeds on all low-growing papilionaceous plants. The statement, notwithstanding, seems somewhat loose. The same writer says that the caterpillars "devour each other."

Immediately on arrival, the eggs changed from their normal colour to a dull blackish, and some larvæ hatched out on the same day, and continued to emerge daily for about a week. These caterpillars, in captivity, have a tendency to wander from their food-plants, which makes them rather difficult to rear; and for some unaccountable reason, even when on their plants, many of them seem to die, while others do well. When very young, the larva of *ballus* is blackish, and is thickly covered with rough hairs; spiracles black; but it afterwards changes in colour, a fact which Guenée, who described the species, seems to have overlooked.

The caterpillar which I am now describing was born on March 29th last, and was kept from the first entirely in a corked bottle, in a room with partially opened windows facing south, and averaging about 65° Fahr. It was fed exclusively on *Medicago denticulata*.

On April 22nd it changed its skin for the first time. During the periods of moulting the larva remained quite stationary, generally at the bottom of the bottle, without eating. This operation usually lasted for three days.

Up to April 24th it only consumed the chlorophyl, eating holes in the middle of the leaves.

The second moult was undergone on May 1st, and the caterpillar now ate not only the chlorophyl of the plant, but also the parenchyma itself, devouring the sides as well as the centre of the leaves.

On May 12th it cast its skin for the third time. It would be interesting to know whether these changes are accelerated in a state of confinement, or *vice versâ*.

On the 27th ult. I transferred the larva, which now measured exactly half an inch in length, to a cage; but it was afterwards returned to the forcing-glass; and on the 31st inst. it ceased eating, and wandered restlessly about. At this time the caterpillar began to assume a pale pinkish colour; it also emitted a reddish-coloured fluid, and on the 6th of June it settled on a piece of paper to pupate. On looking for the larva at 9 a.m. on the morning of the 11th ult., I found that the transformation had already taken place, although it was still in the caterpillar state late on the previous evening.

The time thus occupied, from the birth of the larva to the completion of the chrysalis, was seventy-four days; the pupa hibernates. The chrysalid of *Thestor ballus* is not attached at the head and tail by silken threads, and the discarded skin of the

whilom larva remains firmly fastened at the tail, which might lead one to suppose that the caterpillar, in a state of nature, undergoes its metamorphosis beneath the surface of the earth, as the larvæ of *Thecla quercus* and *Polyommatus phlœas* have been known to do.

It measures one-third of an inch in length, and in girth at the broadest part, *i. e.*, the middle, the same. In shape and colour, being fully matured, it appears to most resemble the chrysalid of an ichneumon fly (*Pimpla turionellæ*). When first formed the pupa of *Thestor ballus* is light Indian yellow in colour, deeply tinged with crimson on the back, and especially at each extremity; the dorsal line is black, edged with crimson reddish, and bordered by eight small diagonal streaks, larger at the head and becoming smaller towards the anal point; wing-cases yellowish.

The next day (the 12th inst.), however, the chrysalis changed to reddish brown, lighter on the back, and with clear black dorsal line; wing-cases ochreous yellow with a decided crimson tint; head dark brown, the antennæ standing out in relief. As far as I have observed, it is not capable of any appreciable movements, a fact which is, I think, noticeable in the pupæ of many of the Lycænidæ, *e. g.*, *Thecla betulæ*, *T. spini*, and *Polyommatus phlœas*, among others.

Nice, France, June, 1893.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 215.)

### LYCÆNIDÆ.

**THECLA BETULÆ, L.**—"Very common in the lanes and roadside hedges of the South and West of Ireland in August, frequenting the flowers of the bramble, and settling the moment the sun is obscured, when it may readily be taken with the fingers; has not been noticed in Ulster or Leinster" (*B.*). I doubt if, in late years, this species can be met with in such numbers, and prefer to say that it is abundant in certain localities in Munster; and in Co. Galway at Claring Bridge, and Oranmore (*B.*); Cork (*G. F. Mathews*); Killoghrum Wood, Enniscorthy (*M.*); Blarney (*B.*), Killarney.

**THECLA QUERCUS, L.**—Near Dundrum, and elsewhere in Co. Dublin; also in Wicklow at Bray Head, &c.; Co. Kerry; Limerick (*N.*); Skibbereen, rare; Galway, a few (*R. E. D.*).

**THECLA RUBI, L.**—Generally distributed throughout the southern counties, where it is frequently abundant. It does not



vary appreciably, except in the series of white streaks on the under side of hind wing, which in most Irish specimens are wanting, wholly or in part; often represented only by a single one on the costa. Occasional in Co. Dublin; in Co. Wicklow at Powerscourt, Tinahely, not scarce (*Bw.*); Westmeath, abundant on the bogs at Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*); in King's Co. at Tullamore and Toberdaly, abundant; rare at Sligo and Markree; abundant at Cappagh, Co. Waterford; common in many places in Co. Cork, Bandon; and very abundant at Glengarriff, Killarney, Bere Island, and Kerry, generally; Galway, abundant; Limerick (*N.*) near Crossmolina, Co. Mayo.

*POLYOMMATUS PHLÆAS*, *L.*—Occurs throughout Ireland, but not, I think, in large numbers in the northern counties. I have noticed the late brood in Ards, North Donegal, in Sept.—Oct. I have an Irish specimen with the orange bleached to a straw colour, approaching var. *schmidtii*, taken near Favour Royal, Co. Tyrone; and another with a similar colour on one fore wing, otherwise normal. The ordinary variations, with broad hind marginal black bands and large spots, and more or less blue spots on orange band of hind wing, occur.

*LYCÆNA ÆGON*, *Schiff.*—"The Murrough of Wicklow, and near Rostrevor" (*B.*).

*LYCÆNA ICARUS*, *Rott.*—Some years ago I was so much struck by the unusual characters presented by Irish specimens of this species, the brilliant female of which I referred to in 1885 ('Handbook of European Butterflies'), that I was preparing to publish a notice on the Irish forms of *icarus*; but, fortunately, in January, 1887, Mr. South commenced a series of articles on the genus *Lycæna*, and, with the abundant materials at his disposal, was able to deal with the subject much more thoroughly than I could have done, illustrating his remarks by comparison with various English and Scotch varieties. The monograph dealing with *L. icarus*, appearing in vol. xx., p. 73, of the 'Entomologist,' and accompanied by a coloured plate (pl. ii.), will obviate the necessity of my doing more than refer to the descriptions there very fully given. In the first place, the Irish butterfly usually considerably exceeds in size that of England, varying from about 1 inch 2 lines to 1½ inches in the June emergence; but the individuals of the second emergence are much smaller, and generally conform much more nearly to the usual English type in both sexes, to which, therefore, I need not further refer. Probably referable to var. *pusillus*, Gerhard (*cf.* Dale's 'British Butterflies'). Mr. South notes that the Irish and Scotch *icarus* are similarly characterised by their large size, and the brilliant blue of the female bordered with bright orange marginal ocelli. The chief aberrations observed in the male are as follows:—1. The colour approaching that of *L. bellargus*



(cf. pl. ii., fig. 2, of Mr. South's paper above referred to). 2. The colour approaching that of *L. semiargus* (fig. 3), of which I have seen none so dark in Ireland. 3. Of a very pale lavender, not mentioned by Mr. South. All these occasional aberrations are found rarely in Ireland with the type. 4. With the extremities of the nervures black, and slightly intruding on the fringes of all wings, thus approaching *L. bellargus* in being chequered. The most remarkable specimen of this I have ever seen was taken at Killynnon, Westmeath, by Miss Reynell, and the under side is that of var. *icarinus*, but with all the pupilled spots reduced in size, and several, as well as the basal ones on the fore wing, obsolete; Cappagh, Co. Waterford, Co. Sligo, and Galway. 5. The marginal line next the fringe is generally broadly marked in Irish specimens, contrasting with those of England in this respect (South). 6. Not unusually there is a series of six black spots, or less, on the margin of the hind wing. I have this form from near the town of Donegal; at Cappagh, Waterford; and Markree Castle; and Mr. Russ takes it occasionally on the other side of Sligo. 7. The contour of the hind wings is occasionally very angular at the apex. Varieties of under side:—1. Ab. *icarinus*, Scriba, crops up occasionally with type (see note, p. 75, of Mr. South's paper); Markree, Castletown, Co. Cork, and elsewhere. The increscent form with confluent spots I have taken on the Continent, but not in Ireland. Other aberrations, as noticed in Mr. South's paper, I need only quote. 2. With white discoidal spot on hind wing unpupilled. 3. With the comet-shaped white streak on hind wings prolonged interiorly toward the discoidal spot (fig. 4), approaching the character developed in *L. donzelii*, *chiron*, and *damon*; Donegal and Markree. 4. With the outer margins external to the orange peacock-eye shaped ocelli pure white, a character developed in its extreme form in *L. hylas*, Esp. (*dorylas*, Hüb.); Mr. South records this character as occurring also in some Scotch examples. 5. In some specimens the ground is of a smooth pearly grey, a very general character in Swiss examples, but occasionally a warm rusty brown is shown (fig. 4). The female offers the most conspicuous divergence from the normal English and Continental type, in which the basal half only is dusted with blue scales (fig. 8), the brown of the upper side being widely replaced by a violet or occasionally wholly by the bright blue of *L. bellargus*. These forms are not uncommon in Ireland, in Galway, Sligo, Donegal, Antrim, Down, Westmeath, Waterford, &c., and are accompanied by a series (often almost confluent) of very bright orange peacock-eye markings on the outer margins of all wings, so that some specimens (if not too brilliant) would pass muster as the var. *ceronus* of *L. bellargus* (fig. 12); another most interesting testimony to the genetic affinities of this species. This var. *ceronus* of *icarus* occurs in some abundance at Ballynabinch, Connemara, and at Ardrahan

and other parts of Galway, as well as in some central and southern localities. The figure 11 of Mr. South's plate II. is not of so vivid a tint as some specimens I have taken of this beautiful variety. The Scotch form (fig. 6), with violet dusting on the basal areas, also frequently occurs; and modifications of it, in which the discoidal spots of the under side are indicated on each wing by pale markings, and the comet-like streak similarly and more distinctly. Some specimens, with dark brown ground shot with violet, have the orange peacock-eye marks of hind wing bordered interiorly by a looped edging of pale bluish grey (a trait just suggested in fig. 9), and pale markings on costal apex of fore wing. The form with the hind margins broadly shaded, and the costa (fig. 9), is not unfrequently met with in Ireland, but of a larger size and more brilliant colour. This would appear to be the var. *cærulea*, Gar. I have met with a large brown female form in Galway without trace of blue, and with the orange ocelli very large. The under side of females varies in the relative strength of the warm brown ground tint, often being of a dark bistre on the central area of hind wing. I know of no distinctively Irish characters displayed. Taking a general view of the foregoing, we note, firstly, that the Scotch and Irish races are unusually large (Mr. Jenner Weir notes the Orkney insect being "unexpectedly large," 1 inch 5 lines—Ent. xiv. 3), that they vary in parallel directions from the English type, and present as numerous genetic characters linking them to other species as do the latter; and in the female sex have acquired generally a very remarkable one in addition, an instance of gynandromorphism. It may be that the acquisition of more brilliant colours in the female may be of advantage under less sunny skies, where the sun-loving *Rhopalocera* have less opportunities of selecting their mates, and cannot afford to indulge in long engagements. *L. icarus* is universally distributed throughout Ireland, but in greater abundance along the coast, and in such localities as possess wide areas of untilled coarse pasture lands. In the rich grazing counties, and such as are chiefly devoted to tillage, the species becomes less numerous and more localised, and haunts railway banks, &c. I have not heard that this Irish variety of the female has been recorded as a local form from the Continent; and as it is an important parallel variation to that of *L. bellargus* and var. *syngrapha* of *L. corydon*, think it may receive the varietal name of *mariscolore*.

LYCENA ARGOLUS, *L.*—Locally abundant in woodlands where holly is abundant, but not occurring, so far as I have noticed, in unsheltered districts with holly bushes. I have not seen the second brood in Ireland, but it probably may be met with in the south, as I have taken this butterfly at Killarney as early as the third week of April, and in Wicklow at Powerscourt on the 3rd of May; but in Ulster usually from the middle of May to begin-



ning of June. Nevertheless, I have reason to think that after an early genial spring an occasional second emergence takes place in the autumn. It would be interesting to learn whether the horeomorphic character of the female is shown in Ireland in the second brood, the colour being very pallid, and the apical and outer marginal black band much increased in size, as pointed out by Mr. Jenner Weir. The females of the May brood in Ireland seem, however, to be very broadly banded. Co. Down, abundant (*Bw.*); Donard demesne, May 21st, some years, abundant (*W.*); Co. Monaghan and Tyrone woods about Favour Royal, not very abundant; Co. Dublin, rare; Co. Wicklow, not rare at Powerscourt and the Dargle; Shillelagh Wood, abundant (*Bw.*); Co. Kerry, Mucross, and upper Lake of Killarney, abundant; Co. Cork, Curriglass (*L.*).

*LYCÆNA MINIMA*, *Fues.*—Somewhat local, rare generally inland, but widely dispersed throughout the island. In the north, Mr. Watts records it as abundant on the Antrim coast; between Carrickfergus and Whitehead, abundant (*Bw.*); Co. Sligo at Markree, and abundant in Mr. Russ' neighbourhood; Co. Galway, generally abundant, as at Moycullen and Ardahan (*Miss N.*); near Galway (*A.*); Ennis, Co. Clare (*Br.*); Kilpeaton Bog, Limerick (*N.*); Co. Fermanagh, near Enniskillen (*S.*); Co. Dublin, Sutton, Malahide, in a quarry between Blanchardstown and Clonsilla (*S.*); Co. Wicklow, Newcastle, and Kilcool, &c.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 195.)

### *Sypna obscurata.*

*Sypna obscurata*, Butler, Trans. Ent. Soc. 1881, p. 207.

*S. renisigma*, Moore, Proc. Zool. Soc. 1883, p. 25.

Shillong, Khasia Hills, Darjiling, &c. Type in Coll. B. M.

Strictly speaking, the female type of *S. obscurata* belongs to the slight variety named *S. renisigma*, which only differs in having white dots round the margin of the reniform spot.

*S. lucilla*, Butler, only differs from *S. obscurata* in having the paler central area of the wings replaced by a whitish buff-coloured belt. It may, I think, be no more than a well-marked variety.

*S. martina*, Felder, appears to be nothing more than the female of *S. albilinea*, Walk.

It is quite impossible to separate *Speiredonia* from the family in which *Latebraria* is placed. *S. anops* has the same pattern on



the upper surface as *I. errans*, and the only structural differences that I have been able to discover for the separation of the two genera are represented by the shorter and thicker third joint of the palpi, and a short recurrent vein from the lower radial of the primaries in *Speiredonia*.

*SPEIREDONIA*, Hübn.

*Speiredonia substruens*.

*Tavia substruens*, Walker, Lep. Het. xiv. p. 1276, n. 2 (1857).

Silhet, Dharmasala, Java. Type in Coll. B. M.

With this species Walker confounded specimens of his *Syrnia sparsa* (Lep. Het. xiv. p. 1280), a larger and far more variable species, differing constantly in having, on both surfaces, a sub-marginal series of white dots. Although Walker queries the locality of the type, a second example, received from the same collection, is labelled "Silhet" by the donor.

*Speiredonia alix*.

*Speiredonia alix*, Guenée, Noct. iii. p. 1294, n. 3 (1852).

*Syrnia sparsa*, Walker, Lep. Het. xiv. p. 1280, n. 8 (1857).

Silhet and Andamans. In Coll. B. M.

The species identified as *S. alix* by Walker is simply the *S. zamis* of Stoll.

*Speiredonia zamis*.

*Phalæna zamis*, Stoll, Suppl. Cram. p. 162, pl. 36, fig. 11.

*Speiredonia alix*, Walker (not Guenée), Lep. Het. xiv. p. 1294, n. 3 (1857).

Var. *S. retrahens*, Walker, l. c., n. 4 (1857).

Var. *Ommatophora albifascia*, Walker, Lep. Het. Suppl. 3, p. 947 (1865).

Ceylon, Java, Andamans. In Coll. B. M.

CYLIGRAMMA, Boisd.

*Cyligramma latona*.

*Phalæna latona*, Cramer, Pap. Exot. i. p. 20, pl. 13, fig. B (1779).

*Cyligramma magus*, Guérin, Cuv. Règne Anim. p. 521 (1842).

South, West, and East Africa. In Coll. B. M.

*Cyligramma fluctuosa*.

♀ *Phalæna fluctuosa*, Drury, Ill. Ins. Exot. ii. p. 24, pl. 14, fig. 1.

♂? *Cyligramma rudilinea*, Walker, Lep. Het. xiv. p. 1311, n. 5 (1857).

♂ Lake Tanganyika; ♀ Masai. In Coll. B. M.

I think there can be little doubt that Walker's type is a male; his description exactly answers to two males in the Museum collection.

Guenée remarks that *C. limacina* is slightly larger than *C. fluctuosa*; as a matter of fact this is generally true, though the figures and Guérin's description show the reverse; size is not a very important item in the distinction of these species.

The idea that *C. limacina* may be only a variety of *C. fluctuosa* is evidently based upon the similarity of the upper surface of the two females; but the under surface differs considerably. On the other hand, Guenée undoubtedly confounded *C. limacina* with his *C. argillosa*; and no wonder, for the latter is only a form occurring in Western Africa, Madagascar, and Mauritius.

*Cylogramma limacina.*

*Cylogramma limacina*, Guérin, Cuv. Icon. Règne Anim. p. 520, pl. 89, fig. 2 (1842).

Var. *C. argillosa*, Guenée, Noct. iii. p. 186, n. 1578 (1852).

*Brujas bisignata*, Walker, Lep. Het. xiv. p. 1255, n. 11 (1857).

Eastern and Western Africa, and Madagascar. In Coll. B. M.

The only distinction between typical *C. limacina* and *C. argillosa* is in the indistinct character of the inner series of yellowish spots on the under surface of the secondaries in the female of the latter, and the less prominent submarginal spots on the same surface of the primaries of the male.

*Cylogramma acutior.*

*Cylogramma acutior*, Guenée, Noct. iii. p. 187, n. 1580 (1852).

— ?

This appears to me to be nothing more than typical male *C. limacina*. We have examples from Abyssinia and the river Niger, which fit Guenée's description to a nicety.

(To be continued.)

## NOTES AND OBSERVATIONS.

RETARDED EMERGENCES.—The exceptionally warm weather of the past spring appears to have been conducive to an unusually large number of emergences from pupæ that had lain over for more than one year, the percentage assuming the perfect state being, in the majority of cases that have come under my notice, very much in excess of what I have usually regarded as an average. Thus, from a brood of *Eriogaster lanestris* fed up in 1891 there were no emergences in 1892, but this year more than half of the total number became imagines. *Asteroscopus nubeculosa* is always an uncertain species, so many larvæ dying after going down; but, assuming that the majority of those that went down in the autumn of 1891 became pupæ, the proportion of emergences this year would again be about 50 per cent., although none put in an appearance in 1892. Three imagines of this species also emerged from 1890 pupæ, thus having passed three winters in that stage. From several batches of *Biston hirtaria* fed up in 1891

a considerable number of imagines emerged in 1892, the proportion of those appearing this year being about one to three of the 1892 emergences. Small numbers of *Lophopteryx carmelita*, *Cucullia verbasci*, and *Tephrosia luridata* have also appeared from broods that went to pupa in the autumn of 1891. Whether the unusually warm spring and the exceptional number of such emergences are really cause and effect, or are merely a coincidence, I do not pretend to say on the slender evidence coming under my own notice; but if those entomologists who keep their breeding-cages going from year to year would record their experiences of the present as compared with past years, an amount of evidence would no doubt be forthcoming that would admit of some conclusion being arrived at.—ROBERT ADKIN; 4, Lingard's Road, Lewisham, S.E., July, 1893.

VARIETIES OF *SPILOSOMA* (*ARCTIA*) *LUBRICIPEDA* AND *PSILURA MONACHA*.—Whilst my brothers of the net have been ranging the hill, field, wood, and fen, in active pursuit of their entomological game during the splendid weather of this marvellous summer, unfortunately for myself I have been confined to the solitude of my sick-room through a severe attack of lumbar-neuritis; yet, thanks to the charms of larva-rearing, I have still been able to get some most interesting experiences from amongst my breeding-cages. Last year I fortunately obtained a few ova of *Arctia lubricipeda* var. *radiata*, Curtis, thanks to Mr. Harrison, of Barnsley, both male and female parents being true *radiata* type. The warm April brought all out, and each example proved of *radiata* type—every specimen true to heredity, varying in intensity, still all *radiata*. I obtained a pairing, which duly hatched, and fed up during May and early June; and on the 8th July the first imago made its welcome appearance in my cage, and to date (July 18th) several more; so that, at any rate, there will be this year a partial double brood. All again are quite true to type of parents; some four are almost black, only three small intercellular streaks of cream-colour on the superior wings; the under wings entirely black, relieved only by the fine yellow lines of the nerves of the wings and with black fringes: truly grand vars. A great point of interest is the remarkable manner in which the offspring have followed the type of the parents; and the same thing occurred with a very large brood I this year bred of another type of the same species. I last year reared several hundred larvæ from a selected Yorkshire form, but of a totally different type; in these the character was to form a strong central fascia of the *Noctua* pattern, and from my many pupæ of this form I have indeed bred a wonderful series. These varied from normal southern type to the grand banded form, but totally differing from the *radiata* of Curtis. I selected a female of the strongest banded form and crossed with a good male var. *radiata*. The larvæ from this pairing are now feeding, and I shall watch with much interest the emergence of these imagines to see if there is any blending of the two distinct forms of this curiously variable insect. Besides the beautiful vars. of *lubricipeda*, I, too, have bred some extremely fine varieties of *Psilura monacha*. Mr. Chas. Fenn most kindly sent me a few young larvæ of his most interesting brood of this species, from which he, by selection and in-breeding, has been trying to obtain a perfectly black form; and, to judge by my result, I little doubt but that he has succeeded, as in my short series three of them may very fairly be called black, and all are very nearly so, as even on the white markings they are strongly flecked with black scales.—W. H. TUGWELL; 16, Lewisham Road, July 18, 1893.



NOTE ON THE LARVA OF *DICRANURA VINULA*.—On May 15th I found a larva of *Dicranura vinula*. It was uniformly black. It changed its skin on May 21st, June 2nd, June 11th, June 20th, and spun up on July 2nd. Another, also found in the black stage, on June 6th, changed its skin on June 8th, June 22nd, July 1st, and spun up on July 9th. Is this difference in the number of skins sexual, or is it because the second one was fed after July 1st on poplar?—D. P. TURNER; 14, Havelock Road, Tonbridge, July 18, 1893.

LARVÆ OF *LYCÆNA ARION*, L., ON *ORIGANUM VULGARE*.—I found ten larvæ of *Lycæna arion*, on the 1st ult., and another caterpillar on the 4th inst., in the Vallon des Fleurs, Nice. They measured one-twelfth of an inch each, and were found on *Origanum vulgare* (marjoram). This is, I believe, a new food-plant for the species, as it is always stated as living on *Thymus serpyllum* (wild thyme), which, it is interesting to note, is botanically allied to *Origanum*. I have taken besides (June 27th to July 1st) seventeen imagines of *L. arion*.—F. BROMILOW; Nice, France, July 7, 1893.

ON BREEDING *AGROTIS RIPE*.—Having had some experience in breeding this species, I am pleased to answer my friend Mr. Graves' enquiry (*ante*, p. 220). After several unsuccessful attempts to rear *A. ripe* from the larva, I procured a new earthenware drain-pipe, about three feet in length, and filled it with sea-sand nearly to the top. My larvæ were then placed in this receptacle after my return to London in September, and I supplied them with sliced carrot, of which they freely partook. They disappeared about October, and reappeared about the middle of May, when they changed to pupæ in a slight cocoon just below the surface, from which the moths emerged in about a fortnight's time. On examining my breeding apparatus, I found they had been right down to the bottom of the sand, where they probably hibernated. In this way I have reared imagines from larvæ collected at Tenby, Cumberland, and the Essex coast. The larva is, like many others in confinement, a cannibal.—J. JAGER; 180, Kensington Park Road, Notting Hill, July, 1893.

NOTE ON *ABRAXAS GROSSULARIATA*.—From Mr. Bell-Marley's letter (*ante*, p. 219), it seems that the larvæ of *A. grossulariata* have been deserting the currant and gooseberry bushes for *Euonymus japonicus* in England; they have done exactly the same thing in Jersey. In addition to my own observations here, I have made several enquiries, and always with the same result—namely, that the currant and gooseberry bushes are left almost unharmed, while everywhere the evergreen shrubs are attacked; and this has occurred in all parts of the island. Several of these larvæ were kept in confinement, and currant-leaves placed with the evergreen. They took no notice of the currant, but when the *Euonymus* was removed they ate the *Ribes*, although reluctantly, and when the *Euonymus* was returned they instantly deserted the currant-leaves for it. Gooseberry-leaves were then tried instead of currant-leaves, with a like result. Last year *Abraxas grossulariata* did a great deal of damage to the currant and gooseberry bushes, and also attacked *Euonymus japonicus*, but very rarely. I should be glad if anyone would explain this, to me, strange desertion of their usual food-plant by these larvæ.—STANLEY GUITON; 31, Bath Street, St. Heliers, Jersey, July 8, 1893.

**SESIA MYOPIFORMIS WITH YELLOW BELT.**—At the beginning of the fourth week of June last I took a specimen of *Sesia myopiiformis* with the abdominal band yellow, instead of red.—C. A. BIRD; Rosedale, 162, Dalling Road, Hammersmith, July 12, 1893.

**MIGRATION OF BUTTERFLIES.**—As the April number of this journal has only just reached me *viâ* Japan, I have only now seen Mr. Radley's query (*ante*, p. 134). I would refer him to Mr. M. C. Pisper's paper, "Observations sur des vols de Lépidoptères aux Indes Orientales Néerlandaises et considérations sur la nature probable de ce phénomène," published, in French, by Ernst & Co., Batavia (Java), 1890, in pamphlet form, being extracted from the 'Natuurkundig Tijdschrift voor Ned-Indië,' vol. 50, part 2. It contains particulars of thirty flights of butterflies observed in Netherlands India between 1872—1889, together with a lot of valuable and interesting notes on the subject.—T. E. SANSOM; Esculonia, St. Leonards Road, Eastbourne.

**NOTE ON COCCINELLA OCELLATA, L.**—Larvæ were beaten on June 10th from various foliage, but had evidently dropped from the fir trees. Colour in general slaty blue. Head and thorax black, margined with and having at base of latter a blotch of pale yellow. Abdomen with several pairs of pale spots down the centre of back; also six rows of black spines extending from base to apex, those on side margin of third and fourth segments being of pale yellow. Legs black; coxæ pale yellow. The larvæ pupated on June 11th, the pattern of the wing-cases being plainly visible through the thin pupal covering. As in lepidopterous pupæ, the wings were folded round the front. The beetles commenced their emergence on June 18th, and at time of writing have all (12) made their appearance, the duration of time in this stage being from seven to nine days. Among the specimens bred is one very remarkable variety. Instead of having black spots, encircled with white, only three black spots at base are present, the remainder being entirely white.—G. A. LEWCOCK; 73, Oxford Road, Canonbury, N., June 22, 1893.

**LARVAL FOOD OF NYSSIA ZONARIA.**—During a stay at Blackpool I took, during June, over 400 larvæ of *Nyssia zonaria*, feeding on the following plants;—*Taraxacum officinale*, *Plantago*, *Rumex*, *Trifolium pratense*, and *Tussilago farfara*. Has the larva been known to feed on these plants before?—LIONEL STONES; Northwood, Seymour Grove, Old Trafford, near Manchester.

**L. CYLLARUS v. COSTA.**—When writing in the 'Entomologist' (xxvi. 91), I noticed the capture of a specimen of *L. cyllarus*, Rott., by myself, in which the ocellated spots on the under side of the hind wings were completely absent. The individual in question (a female), was caught at St. Martin-Vésubie (Department of Alpes-Maritimes), on June 5th last. This form is described in Antonio Curò's 'Saggio di un Catalogo dei Lepidotteri d'Italia' (Firenze, 1885), p. 52, as var. *costa*. Signor Curò states it as occurring in "Central and Southern Italy (rare)"; so the above appears to be a new locality.—F. BROMILOW; Nice, France, April, 1893.

**REMARKABLE ABERRATION OF CARABUS VIOLACEUS.**—Whilst collecting at Cowley, towards the end of 1892, I found under a stone a specimen of *Carabus violaceus* which has turned out to be a most curious variety worth, perhaps, recording. The head does not differ from the type, nor does the body,



except in being slightly narrower. The thorax has the posterior angles very strongly and peculiarly developed. It may be described in the following terms:—Thorax slightly broader than long; anterior angles blunt, the margin slightly emarginate, but with a very slightly curved raised carina extending from angle to angle; lateral margins very strongly emarginate, a slight longitudinal almost obsolete depression towards posterior portion; posterior angles very much developed, and produced into a blunt point with the centres depressed. In the centre of the produced angles there is a raised carina, which seems to divide the produced angles into two portions; the outermost portions of the angles are deeply excavated. Posterior margins slightly emarginate and sinuate. Two small depressions are situated close to the margin at the inner side of the origin of the posterior angles.—JOHN W. SHIPP; Oxford University Museum, March 23, 1893.

EXTRAORDINARY ABERRATION OF *TRIPHENA PRONUBA*.—A remarkable variety of *T. pronuba* was taken by my friend Mr. Woodforde and myself at sugar, in Dovedale, on Saturday last. The right upper wing and right side of the thorax are coloured as in the dark mottled forms of the species; the left upper wing and half of thorax as in the light reddish yellow variety.—E. W. H. BLAGG; Green Hill, Cheadle, July 4, 1893.

[As our correspondent most kindly proposed to send us the specimen referred to above for examination, we very gladly accepted his offer. We find that the insect is quite as described; that is, the left half of the thorax is unicolorous with the fore wing on that side, and represents the var. *innuba*, whilst the right half of thorax is darker, edged in front with pale colour, and the fore wing on this side is mottled as in the typical form of the species. It is certainly a very curious and most interesting aberration.—ED.]

## CAPTURES AND FIELD REPORTS.

### THE EARLY SEASON:—

*Bucks, Herts, and Middlesex*.—With the exception of excursions to Horsley and Oxshott with members of the South London Entomological and Natural History Society, my collecting has so far this season been confined to afternoon rambles in the neighbourhood of one or other of the stations on the Metropolitan Railway between Harrow and Aylesbury. Although many species of Lepidoptera have been unusually early in their appearance, I am inclined to think that several of them have been less common than in other years. The following notes are extracted from my diary:—

April 11th.—Amersham, Bucks (cloudy with gleams of sunshine; wind N.E.; cool). Saw two specimens of *Pieris brassicae* and one of *Coremia unidentaria*.

April 22nd.—Amersham (warm sunny day; wind N.E.). *P. brassicae*, *P. rapae*, and *P. napi*, all common. One or more specimens of the following species were also captured or noticed:—*Euchloë cardamines*, *Pararge egeria*, *Strenia clathrata*, *Bapta temerata*, *B. bimaculata* (*taminata*), *Coremia unidentaria*, *C. ferrugata*, *Phoxopteryx lundana*, and *Coccyx strobilella*. The last-named species was flying in numbers about spruce firs (*Abies excelsa*), but mostly out of reach. Five specimens were bred a few days earlier, from a fir cone picked up in the same locality on April 11th.

May 6th.—Rickmansworth, Herts (sunny; wind N.E.). *Rumia luteolata* (*cratagata*), *Panagra petraria*, *Coremia ferrugata*, and *C. uniden-*



taria were fairly common, and a few examples of each of the following Tortrices were captured:—*Tortrix ministrana*, *Hedya servillana*, *Grapholitha subocellana* (campoliliana), *Stigmonota germarana*, *S. internana*, *Catoptria albersana*, and *Argyrolepis hartmanniana* (baumanniana). Among the larvæ obtained were *Tæniocampa populeti*, quite half-grown; *Asphalia flavicornis*, small; and full-grown *Phycis betulæ*. *Coccyx tædella* (hyrciniana) abundant and very variable, ranging from a unicolorous fuliginous to a silvery white with narrow brown markings.

May 10th.—Pinner, Middlesex (warm sunny afternoon; wind N.E.). *Syrichthus malvæ* (alveolus) and *Heliaca tenebrata* (arbuti) fairly plentiful, but the latter rather worn. One example each of *Macaria liturata*, *Emmelesia alchemillata*, and *Cidaria truncata* (russata). A few *Miana fasciuncula* were flying over the meadows in the evening. *Coccyx tædella* was common and variable, and one example of *C. ochsenheimeriana* was captured.

May 22nd.—Northwood, Middlesex (fine bright sun and little wind). *Zygæna trifolii* common; secured several varieties. *Z. filipendulæ*, one imago; also observed a pupa and several larvæ. *Ino statices*, common; one female example very blue in colour. *Euclidia mi* and *E. glyphica* occasionally seen, but the latter were worn. Several *E. cardamines* and one male *Epinephele ianira* were noticed, also numbers of *Cænonympha pamphilus*, a few *Tortrix tenebrata* and *T. icterana*.

May 2th.—Chorley Wood (sunhine and cloud, wind N.E.; cold after sunset). *Abraxas sylvata* (ulmata) common; among the numerous specimens examined one pale variety was detected and duly boxed. Four *Asthenia blomeri* were captured and three others escaped. *Melanippe montanata* occurred with *A. sylvata* sitting on the herbage under the wych elms; most of the specimens were whiter in ground colour than those obtained from hedgerows in same district. *Bapta temerata*, *Cabera exanthemata* and *Larentia viridaria* (pectinitaria) were also seen.

June 3rd.—Northwood (warm but dull). *Z. trifolii* and *I. statices* still common. *Emmelesia albulata*, abundant. *Camptogramma bilineata*, one specimen. Pinner.—There were several *C. tædella* to be had, but they were mostly worn. *C. nanana*, a few, and one example each of *C. ochsenheimeriana* and *S. germarana*.

June 17th.—Chalfont Road, Bucks (fine and warm). A few *A. blomeri*. *A. sylvata* less common than on previous visit. *M. montanata*, scarce. *B. temerata* and *B. bimaculata* still out. *Melanippe unangulata* and *Cidaria fulvata*, one of each. *Metrocampa margaritaria*, common, but mostly worn. Several female specimens of *Strenia clathrata*. Larvæ, almost full-grown, of *Pieris napi* and *Euchloë cardamines*; one of the former pupated the next day, and the imago emerged on June 26th.

June 24th.—Chorley Wood (dull, showery at intervals) *A. blomeri* and *A. sylvata* fairly common. *Coremia quadrifasciaria*, several; also a few *Miana strigilis* at rest on tree-trunks. Larva of *Eupithecia pulchellata* common and almost full-grown in flowers of foxglove. [July 25th.—Although the plants are mostly in seed, there are still plenty of larvæ in all sizes.]

July 1st.—Northwood (a hot day). *Pædisca corticana*, common on oak trunks, and beaten out of bushes under oaks. One example of *Grapholitha cinerana* at rest on aspen. *Miana arcuosa* common after sunset; the specimens were mostly worn.

July 6th.—Wendover, Bucks (an exceedingly hot day, brilliant sun during the greater part of the day). *Epinephele hyperanthes* generally

common, but nothing in the way of a good variety could be found. One example of *E. tithonus* and one of *Pamphila comma* were captured on the chalk. *Eubolia bipunctaria* was common, and so also were *Pyrausta purpuralis* and *P. ostrinalis*; and in a lesser degree *Ennychia nigrata*. *Phoxopteryx comptana* was abundant.

I may mention that a specimen of *Uropteryx sambucaria* was seen in the garden here on June 30th.—RICHARD SOUTH; Abbey Gardens, St. John's Wood, N.W., July 15, 1893.

*Lancashire*.—Most of the usual June insects were out this year in May. May 11th, *Acronycta psi*; 13th, *Caradrina cubicularis*; 14th, *Hadena pisi*; 18th, *H. thalassina* (very common); 19th, *Hepialus lupulinus* (common); 20th, *Hadena adusta*; 21st, *Xylophasia rurea* (common); 22nd, *Tryphæna pronuba* (at rest); 27th, *Abraxas grossulariata*; June 1st, *Chelonia caia* and *Hepialus humuli*; 3rd, *Miana fasciuncula* and *Noctua plecta*; 20th, *Macroglossa stellatarum* (in splendid condition). July 8th, A yellow variety of *Pieris napi* (a female, the yellow being the same shade as *Colias hyale*); 10th, *Xylophasia polyodon* (dark variety in splendid condition), *Charæas graminis*.—LIONEL STONES; Northwood, Seymour Grove, Old Trafford, near Manchester.

*Middlesex*.—A friend of mine states that on April 2nd he visited a railway embankment at Wormwood Scrubbs, where *Trifolium repens* was already well advanced. Three imagines of *Colias edusa* were soon taken, being two males and one female, undoubtedly hibernated, and, as usual, decidedly worn. I have no record of this species having appeared here so early previously.—H. W. BELL MARLEY; Hammersmith, W., July 15.

*Monmouthshire*.—During the early part of June I took *Argynnis aglaia* at Cwm Carn, where it was not uncommon on the mountain sides and in the valleys. On the 19th, at Wentwood, I took *A. paphia* and *A. adippe*; both species were somewhat plentiful, although very difficult to capture, owing to the rapidity with which they moved over the rough ground. Four *Vanessa c-album* fell to my net on the same day. As I only worked one road, I cannot say if this species is distributed throughout the wood, but am inclined to think so, as I saw one early in the year in another part. The following week I went to Llantarnam and captured one *A. aglaia*, a dark female, and one *Melanargia galatea*, and then proceeded to Ponthir and took a rich-coloured *V. c-album*. On the 3rd July I again visited Wentwood and took more *V. c-album*, *A. adippe*, and *A. paphia*. The two latter were slower on the wing than on the previous visit, and a little worn. I saw *Apatura iris* flying around some oak trees; its dark ground colour crossed by the white markings were plainly discernible in the strong sunlight. I was unable to follow it, as the bushes were much too thick and high, so I had to very reluctantly leave the spot. Up to the present sugaring has been a complete failure.—J. E. KNIGHTS; 3, Mount Joy Street, Newport, Mon., July 7.

*Various localities*.—*Rhopalocera*:—*Anthocharis cardamines*, Dorchester and Wareham, May 4th; Northwood, also in May; not abundant. *Gonopteryx rhamni*, Wicken Fen, Cambs., April 27th; one specimen. *Satyrus megæra*, Isle of Portland, Dorchester; Swanage Bay; fairly common, first week of May. *S. ianira*, now in full force and fine condition in lanes round Kingsbury. *S. egeria*, two or three seen at Amersham, June. *Cænonympha pamphilus*, earliest seen at Burwell Fen, Cambs., April 27th; abundant at Northwood, in May. *Polyommatus phleas*, Northwood, May. *Lycæna alexis*, Northwood; Amersham, May and June.



*Vanessa io*, Burwell Fen, April 27th, one specimen. *V. urticae*, Burwell Fen, April 27th; Isle of Portland, May 1st; Amersham, June (hibernated). *V. atalanta*, one fine specimen, Windsor, May. *Melitæa artemis*, banks of Frome, Wareham, May 5th; four specimens taken, others seen, but out of reach, as the low-lying meadows are intersected by dykes. *Argynnis euphrosyne*, four specimens taken, Northwood, fairly common by side of wood there, middle of May. *Syrichthus malvæ*, one specimen, Northwood, June. I do not know whether the scarcity of *G. rhamni* and *A. cardamines* is a matter of general observation, or I have not happened to be in the right locality, but many years have elapsed since I saw either species in abundance. As regards *A. euphrosyne*, Middlesex is not recorded in Newman's 'British Butterflies' as one of the counties where it occurs, but I took it and *M. artemis* at my native place, Southgate, many years since. Newman mentions the latter species as occurring at Kingsbury, on F. Bond's authority. It is likely enough that both species may long ago have disappeared from Southgate, and therefore Middlesex is not given. But as *A. euphrosyne* is found at Northwood that home county may now be added, as regards that species, at any rate. Neuroptera:—*Libellula depressa*, ponds round Northwood and at Kingsbury, May and June; males very abundant this season, and, in comparison of females, in proportion of six to one. *Calepteryx ludoviciana*, osier beds by Thames, a short distance from Victoria Bridge, Windsor, May; males, in comparison of females, in proportion of three to one.—(Rev.) F. A. WALKER; June 7, 1893.

In February I found *Hybernia leucophaæaria* extremely abundant in Surrey, and took some fine varieties. On April 21st I saw *Pieris rapæ* in the Embankment Gardens at Charing Cross, and on June 13th took *Agrotis exclamationis* in the Burlington Arcade. When in the New Forest, in May, I found a larva of *Catocala promissa* stretched at full length on a dead leaf on the ground, and my wife detected one on an oak tree, among the lichen, which the larva greatly resembles. These larvæ spun up about the 18th May, and produced two fine imagines on June 21st, a very early date, I think.—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, July 11, 1893.

PLUSIA MONETA.—I have been so fortunate as to breed thirty-three examples of this beautiful species during the past two months, from larvæ found in May, and hope to send you an account of them shortly.—GERVASE F. MATHEW; H.M.S. 'Mersey,' Milford Haven, July 14, 1893.

PLUSIA MONETA IN HANTS.—On the evening of June 18th my son took a *Plusia* new to me, flying at dusk, near some reeds at the bottom of our garden here. It has since then been identified as *P. moneta* by my friends Messrs. J. M. Adye and MacRae, of Bournemouth.—R. E. BRAMELD; Mudeford, Christchurch, July 7, 1893.

RHOPALOCERA AT WIESBADEN.—To-day a friend of mine took a fine female specimen of *Pieris daplidice* in a meadow by Wiesbaden; also a male *Limenitis populi* was taken. Neither of these are mentioned, in "The Rhopalocera at Wiesbaden," in the 'Entomologist,' vol. xxii. p. 88, &c. We have already taken more than forty different sorts of butterflies this year.—M. P. SMITH; 10, Bachmeyer Strasse, Wiesbaden, May 22, 1893.

VANESSA ATALANTA NEAR MANCHESTER.—*Vanessa atalanta* has reappeared this spring, and larvæ are quite common. This, I think, is an extraordinary occurrence. We are only five miles from the centre of Manchester.—J. RENSHAW; Ash House, Stretford, June 27, 1893.



**MACROGLOSSA STELLATARUM ABUNDANT AT BARMOUTH.**—*Macroglossa stellatarum* is very abundant this year at Barmouth and in the surrounding district, and may be seen in hundreds flying over the numerous patches of red valerian which grow on the tops of the walls. All appear, however, to be in a very worn condition.—ALFRED J. JOHNSON; Erdington, July 9.

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## SOCIETIES.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*July 13th, 1893.*—C. G. Barrett, Esq., F.E.S., Vice-President, in the chair. Mr. C. Oldham exhibited specimens of *Macaria liturata*, Clereck., *Melanthia albicillata*, L., and many others; some fine forms of *Odonestis potatoria*, L.; and a specimen of *Plusia moneta*, captured at Woodford on the 2nd June. Mr. Adkin remarked that this last exhibit was interesting as showing a continued spreading of the species in this country. Mr. South, on behalf of Mr. Blagg, exhibited a remarkable form of *Triphæna pronuba*, L., which was typical *pronuba* on one side and the variety *innuba*, Tr., on the other. Mr. South also showed a variable series of *Coccyx tædella*, and two examples of *C. ochsenheimeriana*, Zell., from Middlesex. Mr. Feun exhibited long bred series of *Dicranura bifida*, Hb., *Boarmia roboraria*, Schiff., and *Noto-donta dictæa*, L., from Bexley, the New Forest, and Deal respectively. Messrs. R. Adkin, South, Frohawk, and C. A. Briggs showed very long series of *Pieris brassicæ*, L., from many parts of the British Isles, the conversation which followed turning chiefly upon the question of the grey-tipped form, which Mr. Briggs suggested occurred in its extreme phase only in the midland counties. It was, however, pointed out that among the series from Folkestone, Harwich, Sutherland, and other places, many of the specimens had the black tips thickly sprinkled with white scales, thus giving them a very grey appearance, closely approaching the midland county examples; and the conclusion arrived at was that the variation was one of general, rather than local or seasonal, occurrence. Mr. Frohawk also exhibited a specimen, the tip of one wing of which had been brushed, thus giving the insect the appearance of having one grey and one black tip, and said that of a very large number that he had reared, all had the tips more or less grey on emergence, but that the white scales were so lightly attached that the slightest rubbing, probably even that caused by flight, would be sufficient to remove them. A specimen taken at Lynmouth, N. Devon, and shown by Mr. South among other examples of this species, was of very small dimensions, not exceeding an ordinary *P. rapæ*, L., in size; and one in Mr. Briggs's series had the black tips, spots and streak of inner margin very strongly developed and to some extent confluent. Mr. H. Moore showed three specimens of the harlequin beetle, *Acrocisus longimanus*, from Trinidad, &c. Mr. Auld, a fine variety of *Lomaspilis marginata*, L., from Folkestone. Mr. Step, a number of pupæ of the bacon beetle, *Dermestes lardarius*, which he stated were being experimentally tried as bait for fishing when in the larval condition. Mr. Barrett mentioned a curious instance in which a number of lepidopterous larvæ had been found in earthen cells in a book drawer, and were supposed to have been placed there by one of the Fossorial Hymenoptera. Mr. West, of Streatham, showed *Sesia bembeciformis*, D.L. Mr. Turner, two varieties of *Argynnis selene*, Schiff., and a number of Tortrices and Tinea,

including *Penthina pruniata*, Hb., *Sciaphila subjectana*, Gn., *S. hybridana*, Hb., *Tortrix ministrana*, L., *Phoxopteryx mitterpachneriana*, Schiff., *Nemophora swammerdammella*, L., &c. Mr. Briggs also exhibited a portion of the outer covering of a tree wasp's nest, which was curiously striped with bright blue. Mr. Step said it was well known that wasps, when short of the usual material for their nests, would utilise ready-made paper and similar substances, and he suggested that the blue colour might have been caused by the insect appropriating portions of a blue poster from some hoarding, and the fact of the colour being in stripes would be accounted for by the manner in which the wasp works.—H. WILLIAMS, *Hon. Secretary*.

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## RECENT LITERATURE.

*The Lepidoptera of the British Islands.* By CHARLES G. BARRETT, F.E.S.  
Vol. I. Rhopalocera; pp. viii, 313, 8vo. London: L. Reeve & Co.  
1893.

As our knowledge of the species of Lepidoptera occurring in the British Islands increases, it is obvious that new works upon the subject become a necessity from time to time. During the ten years which elapsed between the publication of Stainton's 'Manual' and the appearance of Newman's 'British Moths and Butterflies,' much interesting and valuable matter had been stored up in the Entomological Magazines, Proceedings of Societies, and private note-books. The last-mentioned author did not, however, avail himself so fully as he should have done of the information at his disposal. Seeing how greatly the number of assiduous collectors and careful observers has increased during the latter quarter of the present century, and having regard to the improved system of recording facts and observations, it follows that at the present time there should be a vast amount of trustworthy and important material ready to be dealt with by any one undertaking the task of writing a monograph of our Lepidoptera. The nineteenth century is fast drawing to a close, and the time seems a very suitable one for the production of such a work as that upon which Mr. Barrett is engaged, and of which the first volume, dealing with the Rhopalocera, is now before us.

In his Preface, our author states that he has ransacked all the store-houses of information; we are therefore somewhat surprised that he has found so little in the course of his research that he deemed worthy to be incorporated in his book. We cannot, however, suppose that any items have been purposely ignored; on the contrary, we feel assured that he has most carefully perused and impartially considered every note and paper bearing upon his subject. To have done less than this would have been an injustice to the intelligence of British lepidopterists. It may then be taken for granted that all that is sound and wholesome for us to assimilate has been judiciously garnered, whilst the unprofitable and pernicious has been rejected. This laudable care is well exemplified in the accounts of the earlier stages of the various species, as these are either drawn up from his own observations or from that of others on whom he could rely.

Localities for the more or less local species are given, but we think that in some cases the remarks under this head might well have been extended. Turning to Geographical distribution, we find that this phase of the subject has not been treated as fully or correctly as it might have been if writers on other faunas than that of Britain had been more freely consulted. Some



species, such as *Pieris brassicae* and *Colias edusa*, are erroneously stated to occur in Japan, whilst of some others, such as *Leucophasia sinapis*, *Colias hyale*, and *Vanessa io*, all of which are found in Japan and Amurland, no mention is made of their distribution outside of the British Islands.

Variation is considered at some length, but, as a rule, reference is only made to a few of the more striking forms of variation. Of course it is very interesting to know that curious aberrations or abnormal specimens of certain species are contained in a particular collection, but such information does not help us to understand much about the general range of variation obtaining in such species. In the present day there should be no difficulty in comparing forms of a species occurring in Britain with those that occur in other parts of Europe or in Asia. On p. 86 a variety of female *Lycæna* (*Polyommatus*) *corydon* is mentioned as "probably unique as a variety," but from the description it appears to be an example of the well-known var. *syngrapha*. Again, on p. 132, reference is made to forms of *Vanessa urticae*, one of which seems to approach the Japanese var. *connexa*, Butler, and another to a local Indian race of the species, but these interesting facts are omitted. Many similar instances might be quoted.

In the matter of synonymy, we think that Mr. Barrett has acted unwisely in adopting the somewhat evasive expedient of giving some of the various trivial names by which a species is known, and inviting his readers to use that which they may happen to prefer. Apparently the fact was overlooked that one of these names must of a necessity precede the others, and that the first one would be considered to be the one adopted by him. If, therefore, Mr. Barrett, in those cases where he uses a name for a species different to that of Staudinger's Catalogue, has not assured himself that the nomenclature of Dr. Staudinger, which is accepted by a very large majority of European—including British—entomologists, is wrong, he cannot be certain that he is not himself in error. The plea that he has not had time to study the question is an insufficient one, and does not justify him in ignoring the opinion of those who have given a very great deal of time and consideration to the subject.

In adopting *Chrysophanus* for *dispar*, *phleas*, &c., Mr. Barrett is quite correct, but we are unable to understand why he places *batica* and *argiades* in *Lycæna*, and uses *Polyommatus* for all the other "blues." As he has thought it desirable to generically separate *batica* and *argiades* from the other species usually included in *Lycæna*, he should have placed the former in *Polyommatus* and the latter in *Everes*, as they are considered to be the respective types of those genera. Again, as *minima* (*alsus*) is the type of *Zizera* and *argiolus* the type of *Cyaniris*, he might have still further broken up the little band of British *Lycænidae*, and been quite up to date in doing so. *Palæmon* (*paniscus*) is the type of *Carterocephalus*, Lederer, and should not be placed in *Cyclopides*, as none of the species belonging to that genus have anything in common with *palæmon*.

On the whole, Mr. Barrett is to be congratulated on the successful completion of his first volume, which, although it is not beyond criticism in the matters we have indicated, compares most favourably with any previous work on British Butterflies. The type is clear, and there are few printer's errors. It would perhaps have been an improvement if the descriptive portions had been distinguished by a different type. We understand that an edition on large paper, with coloured plates, has been published, but we have not seen this.



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## *SPILOSOMA LUBRICIPEDA* VAR. *ZATIMA*.

By RICHARD SOUTH.



Fig. 1



Fig. 2

Fig. 1. Form of *Spilosoma lubricipeda* intermediate between var. *zatima* and type. Fig. 2. Var. *deschangei*, Depuiset. Both enlarged one-sixth.

THIS form of *Spilosoma lubricipeda*, which is considered by many continental entomologists to be a distinct species, was figured by Cramer in 1781 as *Noctua zatima* (Pap. Exot. iv. pl. cccclxxxi. fig. F). The specimen represented was said to be from Surinam, but this was probably an error. In the year 1863, about a dozen examples of *zatima* were taken one day during May in Heligoland, and since that time most of the continental collections have been supplied with this interesting form of *S. lubricipeda*, either direct from Heligoland or from the semi-domesticated descendants of stock from that island. Millière (Icon. pl. xlix. figs. 5, 6, 7) figures a male and a female of this

form as *Spilosoma zatima*, and also a modification in which the ground colour is pale buff, and the black bordering of the neuraction is narrow and restricted to the outer marginal area. Another modification of the *zatima* form, but in the opposite direction, is the example figured by Depuiset as var. *deschangei* (Ann. Soc. Ent. Fr. 1886, pl. iv. fig. 4). In this all the wings are fuliginous on both surfaces, and the neuraction is pale buff, as also are the head, thorax, and tip of abdomen.

*Bombyx radiatus*, Haworth, Trans. Ent. Soc. i. p. 336 (1812), = *Spilosoma radiata*, Stephens, Ill. Brit. Ent. Haust. ii. p. 77 (1828), as figured by Westwood and Humphreys, Brit. Moths, pl. xviii. fig. 19 (1843), is certainly only a slight modification of *zatima* as figured by Cramer. The specimen was taken in Yorkshire. Another example is figured in the 'Entomologist' for 1874, but the locality from which it came is not mentioned. Mr. Carrington (Entom. xxiii. p. 207) is reported to have stated, at a meeting of the South London Entom. and Nat. Hist. Society, that, between the years 1860 and 1870, *S. lubricipeda* var. *radiata* "only occurred in a timber-yard close to the railway station at York; he had recently visited the neighbourhood, and was interested to find that although the timber-yard had been taken by the railway company, the variety now occurred in fair numbers throughout the whole district." In a most instructive paper on "The 'Radiated' Varieties in the genus *Arctia*," &c., Mr. Porritt (the 'Naturalist,' 1889, p. 233) remarks of *Spilosoma (Arctia) lubricipeda* var. *radiata*: "The form is not at all uncommon about York, and all the collections of that city contain it. That of the late Mr. T. H. Allis, now in the York Museum, contains a long series of it; and another collector in York, less than a year ago, showed me in his boxes, I should say, quite two hundred specimens, all bred from larvæ collected, when nearly full-grown, from the gardens, &c., in York. The variety also occurs in other parts of the county as well, but York appears to be its headquarters."

An important addition to the above information concerning the variety of *S. lubricipeda* under consideration, is Mr. Tugwell's account of his experiment in rearing the form from ova deposited by a female *radiata*, which had paired with a male of the same form (*ante*, p. 247). All the offspring, he tells us, emerged in April, and were of the *radiata* form; and from these he again obtained a pairing, the larvæ from which fed-up during May and June, and a portion of them had attained the imago state between July 8th and 18th. All the imagines of this second brood were of the *radiata* form, and some of them appear, from Mr. Tugwell's description, to be referable to var. *deschangei*. It is exceedingly interesting to find that the range of variation of the Yorkshire *radiata* is co-equal with that of the Heligoland *zatima*, and that in each case the varieties are reproduced even when reared from the egg

in a locality widely distant from the native habitat. It is also remarkable that this curious form should almost simultaneously become comparatively common in Heligoland and York.

An analogous form of *S. menthastri*, figured by Curtis in 1825, under the name *walkeri*, bears a very strong resemblance to *S. lubricipeda* var. *zatima*; it occurs in Scotland, and more rarely in Yorkshire. Mr. Porritt has bred examples of *S. mendica*, which he states are "more streaked or 'radiated' than any *radiata* or *walkeri*" that he had ever seen. There is an excellent plate of these and other varieties of *S. mendica* in the 'Transactions of the Entomological Society' for 1889.

In the illustration at the head of these remarks, fig. 1 represents a form of *S. lubricipeda* intermediate between var. *zatima* and the type; and fig. 2 agrees exactly with var. *deschangei*, Depuiset. For the loan of these specimens I am indebted to Mr. J. H. Leech, who has a splendid series of *zatima*, comprising all the various modifications of the form.

## AMONG THE BUTTERFLIES IN CORSICA.

By R. S. STANDEN, F.L.S., F.E.S.

(Concluded from p. 238.)

CORTE, a highly picturesque old town, domineered by a large fortress, to which we paid a visit of two days, appeared to be a fine centre for collecting. Jones created quite a panic there amongst *Argynnis pandora*; he also took a specimen each of the rare *A. elisa* and *Satyrus neomyris*, whilst I was braving the authorities and sketching the fort. Two fine streams, the Tavignano and Restonica, flow down from the hills behind the town and out into the extensive plain in front of it, and it was along the narrow margin of these streams, where the bramble and various aromatic shrubs and plants strive hard for a foothold on the rocky banks, that insect-life abounded most. Bocognano, six miles from Vizzavona in the direction of Ajaccio, was also a good locality, and the abode for the time of Dr. and Mrs. Trotter, whose open-handed hospitality on our rather frequent visits will be long remembered.

This village was the home of the two most famous bandits of modern times, Antoine and Jacques Bellacoscia. The former is stated, in the guide-books, to have committed nine murders, and his brother seventeen. Commencing with one death in satisfaction of the family honour, the outlaw flies to the hills; subsequent murders are never committed, they say, except in self-defence, and gendarmes, therefore, have been the most frequent victims. Antoine, after forty-six years of hiding in caves, obtained his



pardon from the government last year, and has taken up the profession of mountain-guide. He came to our hotel one morning with a large bouquet of flowers, from his own garden, for the visitors, and a more benevolent-looking, mild-mannered old gentleman you could not desire to see. Jacques is still at large; and when, occasionally, we heard the report of a rifle in the forest near the hotel where we very commonly collected, the natives would hint that it was only an exchange of courtesies between Jacques and the gendarmes. He is said to have sent two of his most beautiful children to President Carnot last year to supplicate his pardon, but without success. Before leaving England we were gravely cautioned to beware of brigands; whereas, so far as we could learn, this particular form of rascal does not exist—in Corsica at all events. Certainly we were daily in solitudes most favourable for his exploits, but he let us severely alone. It is true that the ordinary peasant often looks as though he would cut your throat for a song, but address a few words of Italian to him, his face brightens up, and he looks the picture of good-nature and amiability, with a large amount of intelligence thrown in. The fact is, in their code of morals, the outlaw, or bandit, is looked upon as a noble fellow, who has done the proper thing and avenged the family honour; the robber, or brigand, as a miserable weak-kneed skunk. We found the peasants almost invariably polite, good-natured, and hospitable.

Before leaving our head-quarters at Vizzavona, no less than eight English entomologists, two of whom were ladies, had foregathered there, and another was on the way; so I am afraid that Coleoptera, Lepidoptera and Diptera have had rather a bad time of it this year; and one can only lament that so much energy was expended for so comparatively small a result, although it is perhaps a case where quality, and the peculiar interest attaching to local forms, compensate largely for lack of quantity.

On June 25th, six of our party assembled at Ajaccio to see what novelties had emerged during the fortnight or more which had elapsed since our previous visit. In addition to the butterflies recorded before, only *Epinephile ida*, which was quite common, and *Syrichthus sao* var. *therapne*, second brood, were added to the list. I secured also two *Papilio podalirius* and a few *Pieris daphidice*, so fresh as to induce the supposition that they also, in this very abnormal season, belonged to the second brood.

Ajaccio, on the south-west, with its 20,000 inhabitants, may be called the social capital of the island; Bastia, on the north-east, with 23,000, its commercial capital. At Ajaccio, as may be supposed, with its almost tropical climate, the art of strolling and lounging is understood to perfection. What serious occupation the people have is a perfect mystery, as they appear to be in the streets or the cafés all day long. At night the whole town collects in the principal street to listen to two small orchestras,

which play alternately at their respective cafés. These are crammed both inside and out; and the roadway is so tightly packed with human beings that, from one end of it, in the uncertain light, the appearance is that of a compact mass of stationary human heads, so slowly do they move. But I have already trespassed too long with my digressions on the indulgent Editor's patience, and must hasten home.

At midnight of the 25th, then, my friend Jones and I got on board the packet for Marseilles; the tree-frogs croaked out their deafening farewell from the Place des Palmiers, and we bade a long "adieu!" to Corsica with its fascinating people and climate, and natural history. We made one break only in our journey across France, viz., at Avignon, in order to visit the famous Roman viaduct of Pont du Gard, and secure a few of the *Melanargia lachesis* and *Gonepteryx cleopatra* which so abound there.

I append a list of the Rhopalocera taken and observed during our visit:—

*Papilio podalirius*, L.—A few at Tattone, 2500 feet, and at Ajaccio. *P. machaon*, L., and the ab. *sphyrus*, Hüb., in which the black bands are wider and the tails shorter than in the type, occurred sparingly at Ajaccio, but we were rather late for the first brood; of the ab. *aurantiaca*, in which the ground colour is of red-gold, I procured one sample from a local collector. Both these forms are somewhat smaller than the type. *P. hospiton*, Génè.—Very scarce. Three were taken in flowery meadows sloping to the river at Tattone, and one at Corte, 1200 feet. Food-plant said to be *Ferrula communis*, which is plentiful enough by the roadside. After we left Mr. Gemann captured two more, and Mr. Raine took one more and saw three others.

*Pieris brassicæ*, L., *P. rapæ*, L., and *P. napi*, L.—Generally distributed; the latter not so common as the two former, but all large, strongly marked, and varied. *P. daphidice*, L.—Abundant and fine, occasionally up to 2500 feet.

*Euchloë tagis* var. *insularis*, Stgr.—Tips of fore wings paler than type; spots on under side greener and very small. Two specimens presented by local collector. Fairly common in March. One fresh specimen, presumably second brood, was taken at Ajaccio in June.

*Leucophasia sinapis*, L.—Common everywhere. Failed to meet with the spring ab. *lathyri*, Hüb., said to occur here.

*Colias hyale*, L.—Two or three solitary specimens observed at Bocognano, 2000 feet. *C. edusa*, F.—Abundant at Bocognano and Tattone. Mr. Jones took a fine example of the ab. *helice*, Hüb., at the former place.

*Gonepteryx rhamni*, L., and *G. cleopatra*, L.—When one takes a solitary female, as was my case at Bocognano, it is impossible to say to which of these species it belongs, and I believe no others were taken before we left; but there is no doubt that both species do occur. We were probably too late for the first brood.

*Thecla rubi*, L.—Two worn specimens only, at Vizzavona.

*Polyommatus phlæas*, L., and the ab. *eleus*, F., were both well represented at Vizzavona, and both exceptionally fine in form. Many of the former had the beautiful series of blue dots on the inner margin of the



copper band in the hind wing, and the latter had the deep purple of the hind wings largely suffused over the fore wings also.

*Lycæna telicanus*, Hüb.—Sparingly up to 3500 feet. *L. argus*, L.—Swarming in the meadows at Tattone, the female deeply shot with blue; a beautiful variety, probably var. *calliopis*, Bdv. Kane gives it as a “Dauphiny *Lycæna*.” *L. baton*, Berg.—A fine large form of the type; we took a few, but were rather late for the spring brood. *L. astrarche*, Berg.—Abundant and fine; orange marginal band of under side very broad and brilliant. *L. icarus*.—A remarkable form of this insect occurred at Tattone. The male is of a brighter blue on the upper side and paler on the under side, in the fore wing of which the basal spots are occasionally wanting, as in the ab. *icarinus*, Meig. The females have no trace of blue on the upper side, and the under side also in many specimens bears a close resemblance to that of *L. escheri*, Hüb., for a small form of which species we at first mistook it. Mr. J. J. Walker has since told me that at Gibraltar this is the typical form of *L. icarus*. *L. argiolus*, L.—Generally distributed, and remarkably fine. *L. cyllarus*, Rott.—Too late for spring brood; one worn specimen only taken.

*Libythea celtis*, Esp.—One in fine condition on June 5th, at Ajaccio, where the food-plant, *Celtis australis*, is common in some of the streets, the leaf bearing a resemblance to that of the wych elm.

*Charaxes jasius*, L.—One only seen at Ajaccio. It is said to be fairly common in May, and again in August, near the sea, where its food-plant, *Arbutus unedo*, grows wild.

*Vanessa c-album*, L.—Generally distributed. Spring form larger than with us, and so pale as to tempt one with the delusion of its being *V. egea*, which we did not see at all, although Kane gives a locality for it near Ajaccio. *V. urticae* var. *ichnusa*, Bon.—Larvæ in large families on the nettles all round the hotel at Vizzavona. Last year's and this year's imagos flying together before we left. In Corsica this variety appears to replace the type, and is alpine in its choice of climate, being observed by one of our party up to 6000 feet. *V. io*, L., *V. atalanta*, L., and *V. cardui*, L.—All putting in an appearance as we left. Those I took were large, but otherwise not remarkable.

*Argynnis latonia*, L.—Common and fine everywhere. *A. elisa*, Godt.—This very striking and purely Corsican insect was beginning to appear in some numbers as we left, and was taken at various altitudes, and in diverse surroundings, from Corte to Vizzavona. *A. pandora*, Schiff.—A similar distribution to the last, but more abundant. Quite a number were taken at Corte, Tattone, and Bocognano before we left; and they are said to occur plentifully a little later at Vizzavona.

*Satyrus circe*, Fab.—Said to be common at Ajaccio in June, but only one example of it was taken up to the date of our leaving. *S. neomyris*, Godt.—Only three or four taken and observed during our stay; but I have since heard that they were not at all scarce at Bocognano early in July. *S. semele* var. *aristæus*, Bon.—This beautiful insular variety, with its broad and deeply fulvous coloration, was putting in an appearance just as we left, and is said to occur rather commonly up to quite high altitudes.

*Pararge megæra* var. *tigelius*, Bon.—Abundant everywhere, from the sea up to great elevations. They are smaller and paler than the type, the male having many distinctive characters, but the female wanting only the second median band in the hind wing. The type, as far as our observation went, does not occur. *P. egeria*, L.—Universally distributed. The fulvous ground colour in some cases inclines to orange.



*Epinephele janira* var. *hispulla*, Hüb.—Extremely abundant up to 2500 feet; replacing type and somewhat larger, but not so large as some I have from Greece. *E. ida*, Esp.—Common at Ajaccio end of June.

*Cænonympha pamphilus*, L.—Generally distributed. *C. pamphilus* var. *lyllus*, Esp.—Appearing commonly at Ajaccio as we left; in this case, probably the form assumed by the second brood of the type. *C. corinna*, Hüb.—Quite the commonest butterfly at Vizzavona on our arrival; not so common lower down.

*Spilothyrus althæa*, Hüb.—Occurs sparingly from sea-coast up to about 2500 feet.

*Syrichthus malva*, L.—Similar distribution to the foregoing. *S. sao* var. *therapne*, Ramb.—A handsome bronzed form, not at all common, and hard to take from its method of flight and assimilation of colour to its surroundings. Impartial in its choice of climate; for at Vizzavona, above the hotel, some score or so of specimens had already been taken in May by Mr. Raine. They were still flying there in a more or less battered condition up to the middle of June; and on the 25th the second brood was already in full flight at Ajaccio, 4000 feet lower.

To summarise briefly the result of our observations:—There are five good species, viz., *P. hospiton*, *A. elisa*, *S. neomyris*, *E. nurag*, and *C. corinna*; and four varieties, viz., *E. tagis* var. *insularis*, *S. semele* var. *aristæus*, *P. megæra* var. *tigelius*, and *S. sao* var. *therapne*, peculiar to the Islands of Corsica and Sardinia; and of these nine we may congratulate ourselves on having taken eight, *E. nurag* alone evading our observation. Out of the thirty-eight European genera, only nineteen—just one-half—are credited to Corsica. The important families of *Thais*, *Parnassius*, *Melanargia*, *Erebia*, and *Hesperia*, are entirely unrepresented; and when those gentlemen who lingered some time after us have made out their lists, it will probably be found that the number of species falls far short even of those comprised within the British Isles.

My notes of Heterocera, I regret to say, are far too meagre to be worth recording, and I can only hope that others have been more observant.

67, Earl's Court Square, S.W., July 27, 1893.

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## A LIST OF THE SPECIMENS BELONGING TO THE GENUS *PERGA*, LEACH, IN THE OXFORD UNIVERSITY MUSEUM.

BY JOHN W. SHIPP.

1. *Perga dorsalis*, Leach, Zool. Misc. iii. p. 117, n. 4. pl. cxlviii. fig. 1, 1817; Westwood, P. Z. S. 1880, p. 362; Kirby, List Hymen. vol. i. p. 18, 1882. *P. scutellata*, ♀, Westwood, Griff. Anim. Kingd. xv. p. 402, pl. lxvi. fig. 2, 1832. Type, part in B. M. and Mus. Oxon. *a*, New South Wales (2), (coll.

Saunders); *b*, New Holland (Kirby); *c*, Moreton Bay, 1858; *d*, Tasmania; *e*, Queensland; *f*, *scutellata* (type), New South Wales (2), (coll. Westwood).

2. *Perga schiodtei*, Westwood, P. Z. S. 1880, p. 364, pl. xxxiv. figs. 3, 4; Kirby, List Hym. vol. i. p. 20. Type in Mus. Oxon. *a*, ♂ (type), Australia; *b*, ♂, Australia; *c*, ♀ (type), Adelaide (Wilson); *d*, ♀, New South Wales; *e*, ♀, Adelaide (2).

3. *Perga kirbii*, Leach, Zool. Misc. iii. p. 117, n. 8, 1816; Westwood, P. Z. S. 1880, p. 371, pl. xxxvii. fig. 4; Kirby, List Hym. vol. i. p. 21, pl. ii. fig. 2, ♀, 1882. Type in Mus. Oxon. *a* (type), Swan River (ex. Mus. Kirby).

4. *Perga polita*, Leach, Zool. Misc. iii. p. 115, n. 1, pl. 148, fig. 3, 1817; Westwood, P. Z. S. 1880, p. 363; Kirby, List Hym. vol. i. p. 21, pl. ii. fig. 1, 1882. Types in B. M. and Mus. Oxon. *a* (type), New Holland (Leach); *b*, Van Dieman's Land (2); *c*, Melbourne (Bakewell); *d*, Moreton Bay, 1858; *e*, Gold diggings?

5. *Perga klugii*, Westwood, P. Z. S. 1880, p. 363, pl. xxxiv. figs. 1, 2; Kirby, List Hym. vol. i. p. 22. Type in Mus. Oxon. *a* (types of species), New South Wales (2); *b*, Australia (3); *c*, Albany (Brewer).

6. *Perga bella*, Newman, Ent. i. p. 89, 1841; Westwood, P. Z. S. 1880, p. 373; Kirby, List Hym. vol. i. p. 22, 1882. Type in cabinet of the Entomological Club (Newman). *a*, ♂, New Holland (Higgins, 1868); *b*, ♂, Adelaide (Wilson); *c*, ♂, Australia (coll. Saunders); *d*, ♂, Australia (2), (Hope); *e*, ♂, New Holland (coll. Smith); *f*, ♀, New South Wales (coll. Smith); *g* (*basalis*, Smith), Adelaide (coll. Smith); *V. ferrugineus* (part), Leach, Adelaide (coll. Smith).

7. *Perga gravenhorstii*, Westwood, P. Z. S. 1880, p. 366, pl. xxxv. fig. 7; Kirby, List Hym. vol. i. p. 22, 1882. Type in Mus. Oxon. *a* (type), Melbourne, N. S. W. 1841 (Sir S. Saunders).

8. *Perga hartigii*, Westwood, P. Z. S. 1880, p. 369; Kirby, List Hym. vol. i. p. 22, 1882. Type in Mus. Oxon. *a* (type), Australia (coll. Smith); *b* (type), New Holland (coll. Saunders).

9. *Perga peletierii*, Westwood, P. Z. S. 1880, p. 370, pl. xxxv. fig. 6. Type in Mus. Oxon. *a* (type), New Holland (coll. Smith).

10. *Perga newmanii*, Westwood, P. Z. S. 1880, p. 370. Type in Mus. Oxon. *a*, ♂ (type), New South Wales (coll. Saunders); *b*, ♀ (type), Adelaide (coll. Saunders).

11. *Perga lewisii*, Westwood, Trans. Ent. Soc. i. p. 232, 1836; Arc. Ent. i. p. 23, pl. vii. fig. 1 (1841); P. Z. S. 1880, p. 374; Kirby, List Hym. vol. i. p. 24. Type in Mus. Oxon. *a* (type), Adelaide (Hope); *b* (type), Van Dieman's Land (3); *c* (type), Adelaide (2), (coll. Saunders).

12. *Perga smithii*, Westwood, P. Z. S. 1880, p. 375, pl. xxxvi. fig. 6; Kirby, List Hym. vol. i. p. 24. Type in Mus. Oxon. *a* (type), Australia (2), (coll. Saunders).

13. *Perga ferruginea*, Leach, Zool. Misc. iii. p. 118, n. 6, pl. 148, fig. 4, 1817; Westwood, P. Z. S. 1880, p. 376; Kirby, List Hym. p. 24, pl. ii. fig. 6, 1882. Types in Mus. Oxon and B. M. *a* (type), Australia (coll. Kirby ex. Mus. Leach); *b*, Australia (3), (coll. Saunders); *c*, Moreton Bay, 1858 (2).

14. *Perga esenbeckii*, Westwood, P. Z. S. 1880, p. 365, pl. xxxv. fig. 5; Kirby, List Hym. 1882, p. 24. Type in Mus. Oxon. *a* (type), Swan River, West Australia (coll. Smith).

15. *Perga christii*, Westwood, P. Z. S. 1880, p. 366, pl. xxxvii. fig. 2. Type in Mus. Oxon. *a* (type), Swan River, 1865 (Stevens).

16. *Perga guerinii*, Westwood, P. Z. S. 1880, p. 367, pl. xxxv. fig. 1. Type in Mus. Oxon. *a* (type), Australia (coll. Saunders).

17. *Perga cameronii*, Westwood, P. Z. S. 1880, p. 367, pl. xxxvii. fig. 3. Type in Mus. Oxon. *a* (type), Australia (coll. Smith).

18. *Perga dalmannii*, Westwood, P. Z. S. 1880, p. 369, pl. xxxvi. fig. 2; Kirby, List Hym. 1882, p. 25. Type in Mus. Oxon. *a* (type of species), New Holland (Parry); *b* (type), Melbourne (Thwaites).

19. *Perga macleaii*, Westwood, P. Z. S. 1880, p. 371, pl. xxxv. fig. 2. Type in Mus. Oxon. *a* (types of species), Australia (coll. Saunders); *b*, Moreton Bay.

20. *Perga spinolæ*, Westwood, P. Z. S. 1880, p. 371, pl. xxxvi. fig. 4; Kirby, List. Hym. 1882, p. 26. Type in Mus. Oxon. *a* (type), Australia (coll. Smith).

21. *Perga bicolor*, Leach, Zool. Misc. iii. p. 116, pl. 148, fig. 5, 1817; Westwood, P. Z. S. 1880, p. 371; Kirby, List Hym. 1882, p. 26. *a* (type?), Australia (3), (Kirby); *b*, South Australia (Damell, 1863).

22. *Perga foersteri*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvi. fig. 1; Kirby, List Hym. 1882, p. 26. Type in Mus. Oxon. *a* (types of species), New Holland (Higgins, 1868); *b*, Melbourne (3).

23. *Perga cressonii*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvii. fig. 1. Type in Mus. Oxon. *a* (type), Swan River, West Australia (De Boulay).

24. *Perga walkeri*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvi. fig. 5. Type in Mus. Oxon. *a* (type), Sydney (coll. Smith).

25. *Perga vollenhovii*, Westwood, P. Z. S. 1880, p. 365, pl. xxxiv. fig. 5. Type in Mus. Oxon. *a* (type), New Holland (Higgins, 1868).

26. *Perga ritsemei*, Westwood, P. Z. S. 1880, p. 365, pl. xxxiv. fig. 7; Kirby, List Hym. 1882, p. 27. Type in Mus. Oxon. *a* (type), Adelaide (Hope).

27. *Perga brullei*, Westwood, P. Z. S. 1880, p. 364, pl. xxxiv. fig. 6; Kirby, List Hym. 1882, p. 28. Type in Mus. Oxon. *a* (type), South Australia.



28. *Perga dahlbomii*, Westwood, P. Z. S. 1880, p. 371, pl. xxxv. figs. 3, 4; Kirby, List Hym. 1882, p. 28. Type in Mus. Oxon. *a*, ♂ (types of species), Australia (coll. Saunders); *b*, ♀ Australia (coll. Smith).

29. *Perga jurinei*, Westwood, P. Z. S. 1880, p. 378, pl. xxxvii. fig. 6; Kirby, List Hym. 1882, p. 29. Type in Mus. Oxon. *a* (types of species), Swan River (Hope); *b*, Melbourne (Bakewell).

30. *Perga mayrii*, Westwood, P. Z. S. 1880, p. 378, pl. xxxvii. fig. 7. Type in Mus. Oxon. *a* (type), Swan River, West Australia (De Boulay).

31. *Perga leachii*, Westwood, P. Z. S. 1880, p. 377; Kirby, List Hym. 1882, p. 30, pl. ii. fig. 11. Types in Mus. Oxon and B. M. *a*, ♂ (type), Melbourne (Sir S. Saunders).

32. *Perga halidaii*, Westwood, P. Z. S. 1880, p. 377, pl. xxxvii. fig. 5; Kirby, List Hym. 1882, p. 30. Type in Mus. Oxon. *a* (types of species), Adelaide (2), (Hope); *b*, Adelaide (Wilson); *c*, Australia (coll. Saunders).

33. *Perga latreillei*, Leach, Zool. Misc. iii. p. 116, n. 3, pl. 148, fig. 2; Westwood, P. Z. S. 1880, p. 372, pl. xxxvi. fig. 3; Kirby, List Hym. 1882, p. 25, pl. ii. fig. 8. Types in Mus. Oxon and B. M. *a* (type), Australia (coll. Saunders); *b*, Australia (coll. Smith); *c*, South Australia (Damell, 1863).

Oxford University Museum.

## THE WEST INDIAN SPECIES OF *DACTYLOPIUS*.

By PROF. T. D. A. COCKERELL, F.Z.S., F.E.S.

(Concluded from p. 179.)

### (2.) *Dactylopius longifilis*, Comstock.

This species, which is easily recognised by its distinct lateral appendages, and its long fine caudal filaments, is common and injurious in Kingston. I have found it on species of *Adiantum*, *Ficus*, &c. In June, 1892, Miss H. Kilburn sent me two mango fruits, badly attacked by this species.

I have not seen Signoret's *D. ficus*, but, judging from the description, it seems closely allied to *longifilis*.

### (3.) *Dactylopius*, sp. incert.

Mr. Bowrey brought me some specimens of the egg-plant (*Solanum melongena*) grown in his garden in Kingston, which had been severely attacked in some way, and were dying in consequence. On examination the stems showed several holes, which proved to be blind cavities, tenanted by young individuals of

a *Dactylopius*. The roots were most severely injured, being extensively corroded and excavated, and the excavations inhabited by *Dactylopii*. Ants were swarming over the plants.

This species of *Dactylopius* is presumably undescribed, but the specimens were not sufficiently adult for descriptive purposes. It has been recorded ('Insect Life,' iii. pp. 413, 419) that a probably undescribed *Dactylopius* infests the roots of tomato in the same fashion in New Mexico.

#### (4.) *Dactylopius citri*, Boisdual.

All I know about the occurrence of this species in the West Indies is derived from a few examples in the Jamaica museum, contained in a tube marked, "Scale Insect on Crosset [?] Gosset] Coffee." The specimens are not in good condition, but they appear to be the same as *D. destructor*, Comst., which is now regarded as a synonym of *citri*. Comstock remarks that he found *destructor* abundant on coffee-plants.

#### (5.) *Dactylopius brevipes*, n. sp.

In the natural cavities of pine-apples, bought in Kingston, Jamaica, I find specimens of a small active *Dactylopius*, allied to *D. citri*.

It is pale pink in colour, and little over 1 mm. long. Body oval, pink, sparsely white-mealy, segmentation distinct; no bands or spots. Sides with white-mealy processes, seventeen on each side, about equally long, except the four last on each side, which are longer and thicker, but none nearly half the length of the body. Legs and antennæ pale brown. Tarsus decidedly shorter than tibia; there is a "false-joint," quite short, at end of tibia. Femur stout, and a little shorter than tibia and tarsus. Four knobbed digitules; those of the claw short, the other pair very long and slender. Tarsus with at least two pairs of hairs on inner side, and three single ones on outer. Tibia with seven hairs on inner, and seven on outer side. Femur with four short hairs on inner side. Trochanter with one very long hair, almost as long as femur, on its inner side. Antennæ with eight joints, slightly hairy:—3 a little longer than 2, and about as long as 1, or perhaps a little shorter; 4 and 5 about equal, 5 perhaps a little longer; 6 and 7 equal, and shortest; 8 nearly or quite as long as 3.



*D. brevipes*.  
(much enlarged)

This insect appears to be a stumpy form, adapted for life in the cavities of the fruit. It seems to be quite distinct from *D. bromeliæ*, which was found on a pine-apple from Zanzibar.

#### (6.) *Dactylopius simplex*, n. sp.

Forming scattered patches of white secretion, quite irregular in outline, on the upper side of leaf of *Pancratium caribæum*.

♀.—About 2 mm. long, oval, brown, with mealy white secretion; segmentation distinct. No lateral processes or caudal filaments. Tibia nearly as long as femur; tarsus about one-third length of tibia. Claw with

knobbed digitule. Legs brownish yellow, hairy; trochanter with two short hairs. Antennæ 8-jointed;—4, 5, and 6 subequal, and shortest; 7 next shortest; then 1, then 2; 3 and 8 longest. These differences are rather insignificant, except the decided shortness of 4, 5, and 6. Joint 8 emits several hairs, none as long as itself. Boiled in soda, they do not colour it red or brown. The female, after soda treatment, is yellowish red. The white secretion is in the form of long straight threads.

*Larva*.—Elongate-oval, with parallel sides; two caudal filaments, not so long as diameter of body, and joined together by secretion. Colour of larva yellowish brown.

This species was found by Dr. Strachan, in his garden in Kingston, Jamaica, August, 1892.

*D. liliacearum*, Bouché, which has been found on *Pancratium*, must be similar; but so far as I can judge, from the very few details published concerning it, it is probably distinct. *D. calceolaria*, Maskell, seems also to be allied to *D. simplex*.

(7.) *Dactylopius filamentosus*, n. sp.

On a plant resembling a *Vaccinium*, with entire mucronate leaves, 20 mm. long. Found at Cockburn's Harbour, South Caicos, Bahamas, by Dr. Hy. Strachan, June, 1892. In clusters, many together, on the stem; clusters 8 or 9 mm. across, composed of about ten individuals.

♀.—About 3 mm. long, shape of *Coccus cacti*, grey, but covered with white secretion. The female, boiled in caustic soda, turns black, and gives off a purplish black colour. By transmitted light it appears not black, but violet. The margin has a series of short hairs. The caudal tubercles emit the usual filaments, which, however, are very short. Between the tubercles, when the secretion is removed, four hairs, longer than the tubercles, can be seen. The legs are very small. Tibia not nearly twice as long as tarsus. Claw slender, with a very short knobbed digitule. Tarsus with two long knobbed hairs as usual. Inner side of tarsus with a long, rather stout hair, which extends as far as to end of claw. Femur as long, or nearly as long, as tibia and tarsus. Trochanter with a long hair. Colour of legs brownish. Antennæ very short, with only seven joints:—1 and 2 about equal; 3 and 4 equal, shorter than 2; 5 and 6 subequal, shorter still; 6 shortest; 7 long.

Larva reddish. Eggs oval, with contents partly of a verdis-green colour.

The characters of this insect would remove it from *Dactylopius*, as strictly defined; but it is surely congeneric with Maskell's *D. albizzia* and *D. acacia*. I had, at first, referred it to the genus *Rhizococcus*, sens. Comstock; but, as Mr. Newstead has pointed out to me, the terminal joint of the antennæ is *Dactylopioid*.

Institute of Jamaica, Jan. 25, 1893.



## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 244.)

## HESPERIIDÆ.

NISONIADES TAGES, *L.*—Very local, and not known to be widely distributed in Ireland. Galway seems to be its headquarters, specimens from which are characterised generally by very distinct grey markings on the fore wing. The Enniskillen form, similarly. Near Galway, abundant (*A.*), Ardrahan (*Miss N.*), and Castle Taylor; Co. Clare, Cratloe (*N.*), and Ennis. Enniskillen locally somewhat abundant (*S.*).

HESPERIA THAUMAS, *Hufn.*—"Powerscourt, Co. Wicklow, and near Cork" (*B.*).

HESPERIA SYLVANUS, *Esp.*—"The Morrough of Wicklow" (*B.*); not uncommon in a meadow in Lord Kenmare's demesne, Killarney (*W.*).

## HETEROCERA.

## SPHINGES.

## SPHINGIDÆ.

ACHERONTIA ATROPOS, *L.*—Generally distributed; sporadic in its occurrence, only single specimens being taken for the most part. There is no doubt that the climate usually does not favour its propagation, and that it occasionally is an immigrant. In the 'Entomologist,' vol. x. p. 300, the following account is given:—"On October 8th, an engineer of one of the Dublin Steam Packet Co.'s steamers brought me a live *Acherontia atropos*, which had lighted on a crate of cabbages on deck, when twenty-five miles from the Irish coast; and on October 6th, 1876, a *Sphinx convolvuli* alighted on the same steamer." I have also a note of this species being taken at the Tuscar Rock Lighthouse, six miles from the S.E. point of Ireland. Its migrating powers explain the fact that it is almost as often taken in Ulster and the less genial climate of the north-west as in the south. (In 1865, *A. atropos*, *S. convolvuli*, and *V. cardui* were noted to be abundant at Dingwall in the Orkneys.—Ent. vol. iii.) Co. Donegal, Greencastle (*W. E. H.*); Derry (*C.*); Co. Antrim, Ballycastle, 1 by Mr. Milne (*C.*); Lisburn, S. Stears (*W.*); Co. Tyrone, Caledon (*J.*) and Kilskeery (*Br.*); twice taken near Sligo; Co. Dublin, occasional specimens; Howth, 1 (*S. R. F.*); Co. Wicklow, Kilcool, Wooden Bridge (*M. F.*); near Bray, plentiful in 1885 or 1886; Co. Waterford, Cappagh (*U.*); Co. Cork, Bandon (*L.*); near Ballinasloe (*R. E. D.*).

*SPHINX CONVOLVULI*, L.—Also an occasional immigrant, and increasingly so of late years; so much so that it appears probable that it breeds in Ireland in fine seasons, and is a commoner species than *A. atropos*. “In 1859, very common in Dublin and adjoining counties” (B.). In 1882 it occurred in various places; and in 1887 was very numerous all over Ireland. In 1891 and 1892 it also occurred in widely distant localities. The following are places in which it has been taken more or less freely from time to time:—Belfast, Glenarm, Armagh (J.); Caledon, Tyrone; Kingstown, Dublin, Howth, Wicklow (Bw.); Glandore, Co. Cork (D.); Enniscroe, Crossmolina, Co. Mayo; Co. Sligo, Knocknarea (Russ), Lissadell (Miss G.-B.).

[*Sphinx ligustri*, L.—I have no certain record of the occurrence of this species. Mr. Birchall remarks:—“Mr. Haliday has found the same, but I am unable to say where.” I have been unable to verify this record from Haliday’s diary or MSS., except from second-hand information. Mr. Bristow has a specimen, sent him in 1862 or 1863 from Ballymena by an acquaintance, but is unable to verify the capture. Also one from Limerick, of which nothing certain is known. Mr. Brakey once had a number of pupæ of this moth from England, and set free twenty imagines as they emerged, at Trillick, Co. Tyrone, in 1872. The food-plant is common enough in Ireland; and although this fine insect is rather a southern species, being rare in Yorkshire and the north, yet one would imagine that the climate of Southern Ireland would be sufficiently congenial. Even if not originally indigenous, and although not such a migrant as *S. convolvuli*, one would expect that it must occasionally reach the Irish shores, and establish itself. Nor is it an insect likely to escape notice. It is, therefore, probable that, with the increase of observers, *S. ligustri* may be added to our list from southern counties.]

*DEILEPHILA GALII*, Schiff.—“Two specimens are said to have been taken on the coast” (Greene). These were captured by Mr. Coulter, of Dublin; and I have no reason to doubt the record. One at Howth, in 1888, by G. V. Hart, Esq., LL.D.

*DEILEPHILA LIVORNICA*, Esp.—“Two specimens are in the collection of Trinity College, Dublin, captured near Youghal by the late Dr. Ball; and I possess a pair (out of four) (W. K.), taken near Killarney, in 1864, hovering over a bed of petunias” (B.). I have one, taken at Kingstown in 1888, apparently just emerged. The Rev. S. L. Brakey took two at Ennis, Co. Clare, many years ago, at a bed of lilies of the valley. One was also taken at Kilkenny, by the Rev. James Bristow. Two at Ormeau Park, Belfast, on 7th and 11th June, 1888, by Mr. Chas. Watts.

*CHEROCAMPA CELERIO*, L.—The Rev. Joseph Greene records the only capture of this rare species, September 17th, 1881, at Mullaghmore, Co. Sligo, at light.



*CHÆROCAMPA PORCELLUS*, L.—Distributed throughout the island, and fairly numerous in some localities. On the Dublin coast, Killiney, Kingstown, Howth, and Malahide (*Bw.*). I have also met with it at Tramore, Dunmore, on the Waterford coast, as well as in Co. Cork, Sligo, &c. Inland it is found in Westmeath, at Cromlyn (*Mrs. B.*); and near the Lakes of Derrevaragh and Belvidere, and at Killynon (*Miss R.*). In Galway it abounds at Ardahan, and in central and eastern localities of that county is not scarce.

*CHÆROCAMPA ELPENOR*, L.—This handsome species is everywhere to be met with, and very abundant in many localities, and is more numerous inland than the preceding, which is more frequently found on the sea-coast. Near Belfast it is not scarce (*Bw.*); in the Co. Tyrone, at Favour Royal, abundant; at Farnham Cavan, and Drumreask Monaghan. In Westmeath, at Cromlyn (*Mrs. B.*) and at Killynon (*Miss R.*), it is abundant. In the Cos. Dublin, Wicklow and Wexford, Waterford and Cork; at Killarney and Sneem, Kerry; at Ennis, Co. Clare; in Co. Galway, Castle Taylor and near Ballinasloe; at Markree Castle, and elsewhere in Co. Sligo, &c.

*SMERINTHUS OCELLATUS*, L.—This handsome species seems to be widely distributed, but usually scarce. Single specimens have been taken as follows:—Near the Phoenix Park, Co. Dublin (*Mr. Rathborne*); Tinahely, Co. Wicklow (*Bw.*), three in the fens of Wicklow, by myself; Cromlyn, Westmeath (*Mrs. B.*); Limerick (*Bw.*); Ennis (*Br.*); Cappagh (*U.*). In Co. Galway it is very abundant locally (*R. E. D.*).

*SMERINTHUS POPULI*, L.—Abundant throughout Ireland, from Malin Head (*W. E. H.*) to Cork. Some handsome varieties are often bred, suffused with lavender on the bases and oblique ante-marginal band. Mr. Fetherston H. has specimens of this from Mayo; and Mr. M. Fitzgibbon, from Howth. The latter has also bred specimens with rich olive-green central band and hind margin, and similar lavender suffusions, and the discoidal mark very white and prolonged to the costal nervure. Another, in which russet takes the place of the green, and the lavender is of a warmer tone. All these possess the usual fuscous basal patch on the hind wing. I have seen very similar aberrations from mid-Galway (*R. E. D.*).

*SMERINTHUS TILIÆ*, L.—The only locality for this species that I know in Ireland is in the Co. Galway, where it is scarce; but I have seen several specimens, one of which has the hind wings very pale russet, and the central band of the fore wing large and continuous, and the green replaced by an olive-brown. This accession to the Irish list, together with a large number of others of most remarkable character and importance, is due to



the energy and good fortune of a friend who has only lately taken up the study of Lepidoptera, and seems to have turned up a perfect treasury of rarities in portions of the old forest districts and extensive moors and bogs of Galway. I have had the pleasure of examining his collection, and naming many extraordinary rarities which had escaped his notice.

*MACROGLOSSA STELLATARUM*, L.—Very variable in numbers, according to the amount of sunshine enjoyed each summer. Often abundant even near Belfast and Lisburn (W.); but in cold summers scarcely to be seen. The larvæ feed up very rapidly in warm weather, so that it is possible that there may be a succession of broods on the Continent. At Kingstown I have watched the female depositing her ova, and from these, within about six weeks, have bred two imagines in September, the rest of the pupæ hybernating.

*MACROGLOSSA BOMBYLIFORMIS*, Och.—Abundant in many Irish localities, but appears to be rather fickle in habits, disappearing suddenly from its usual habitat without apparent cause. It is easily taken when feeding on the flowers of bugle or marsh-rattle; but on very hot days its activity on the wing is prodigious, as it scarcely pauses to taste the flowers, and flies as rapidly as the preceding species. When first emerged from the pupa, the clear membrane of the wings is slightly scaled. In the north it is found at Inishowen (W. E. H.), in Colin and Crawfordsburn Glens (Bw.), and elsewhere on hills about Belfast (W.). In Co. Monaghan, at Drumreask, where it used to be very abundant; and near Favour Royal and Altadiawan, Tyrone, it is numerous. Cromlyn, Westmeath, scarce (Mrs. B.); Ardrahan, Co. Galway (Miss N.); Hollybrook, Roscommon (Miss ff.); L. Gill, Sligo; in Co. Dublin, and Killynauly Wood (Bw.) Wicklow; and at Killarney; Co. Cork (L.) at Glandore (D.), very abundant near Kenmare (Miss V.). Its congener, *M. fuciformis*, the commoner species in the sister country, has never been observed in Ireland.

#### SESIIDÆ.

*TROCHILIUM APIFORMIS*, Clerck.—“Cork and Waterford, but has not been observed further north” (B.). Osier beds being rather infrequent in Ireland, *T. crabroniformis* is often found in the common poplar, as well as in sallow in willow. I have found poplar trees infested with *Trochilium* at Lissadell, Sligo, and in the Co. Monaghan and elsewhere, but have not taken the imago. I have, however, reason to believe that *T. apiformis* is occasionally to be found in the northern half of the island. In a marsh near the city of Waterford I found the larvæ of *apiformis* plentiful in young poplars, and saw the imago bred by a resident in that neighbourhood. The Rev. J. Greene has taken it near Dublin. Glandore, Co. Cork (D.).

*TROCHILIMUM CRABRONIFORMIS*, *Lewin*.—Widely spread and abundant in many parts of Ireland, infesting poplar, willow, sallow, and osiers. Knockbreda, Co. Down (*Bw.*); Derry; near Monaghan; Cromlyn, Westmeath (*Mrs. B.*); Howth, abundant; in the suburbs of Dublin (Rathmines and Drumcondra) and Kingstown, abundant; Malahide (*N.*); at Armagh and Castledermot, Co. Kildare (*J.*).

*SESIA SCOLIIFORMIS*, *Bork*.—Cromaglaun Glen, Killarney, is the locality where Mr. Birchall found birch trees infested, he believed, with this species, but he did not get the imago. I also noticed similar traces in the same neighbourhood in 1885, but saw no imagines.

*SESIA TIPULIFORMIS*, *Clerck*.—Common near Dublin, and elsewhere found in Ireland. Derry (*C.*). I have reason to believe it is widely distributed, but it seems to have been overlooked by collectors.

*SESIA MYOPIIFORMIS*, *Bork*.—"Dublin and Cork" (*B.*).

*SESIA CULICIFORMIS*, *L.*—Killarney (*B.*).—The Rev. Joseph Greene records it as Irish, on the authority of Mr. A. H. Haliday. I have found birch logs bored and empty pupæ near Ballinasloe. Mr. Milne, of Derry, reports traces of a similar nature in his neighbourhood.

*SESIA MUSCIFORMIS*, *View*.—Mr. Gregson is said to have taken a specimen at Howth. I found it on the Saltee Islands, Co. Wexford, where, however, it was scarce.

(To be continued.)

## NOTES AND OBSERVATIONS.

**BUTTERFLIES AND COLOUR.**—Bearing on the subject of butterflies being attracted to flowers or objects of a colour resembling their own, I recently stumbled upon a note, by Mr. E. C. Lefroy, in 'Science Gossip' (1871, p. 258), of which the following is an extract:—"When reading some papers on butterflies by the Rev. J. Johns, in a monthly serial, I came across a paragraph in which the writer said that *P. brassicæ* and other white butterflies had a predilection for settling on flowers of the same colour as themselves, and although I was at first inclined to doubt the statement, I resolved to watch for myself. The result was that not only am I firmly convinced that the whites have a preference for white flowers, but, going further than this, I have noticed that a small bed of *Nemophila* had such attractions for the blues as to prevent them settling on other flowers."—H. G. KNAGGS; Camden Road, August 7.

**NOTE ON THE LARVA OF DICRANURA VINULA.**—In reply to Mr. Turner's query concerning the larval ecdyses of *Dicranura vinula* (*ante*, p. 248), I believe that the number of ecdyses depends largely upon the food. I have reared a good many broods of this moth, and have found that black poplar



invariably seems to produce three ecdyses in the larvæ after the "black" stage. White willow, white poplar, and willow, produce, in most cases, four ecdyses. With white willow, however, I have occasionally found five ecdyses; in one case (which turned out to be a somewhat rare variety) six. White poplar sometimes produces three ecdyses. — W. H. SEYFANG; St. Peter's College, Cambridge, August 15, 1893.

SUGAR VERSUS HONEYDEW.—In 1875, and again in 1876, I had excellent opportunities for observing the nightly attendance of moths at sugar and honeydew, and an account of these observations will be found in the 'Entomologist' for 1878 (xi. 271). In 1876, 202 specimens were taken between July 14th and August 15th, and of these 61 were attracted by the honeydew. Of the 476 specimens of Noctuæ taken between July 9th and August 28th in the previous year, only 96 were from honeydew. The numbers were made up in the respective years as follows:—

1875.			1876.		
	Sugar.	Honeydew.		Sugar.	Honeydew.
<i>Calymnia diffinis</i>	76	11	<i>Caradrina taraxaci</i>	40	27
<i>Noctua rubi</i>	68	5	<i>Calymnia diffinis</i>	37	6
<i>Calymnia pyralina</i>	60	7	<i>Cerigo matura</i>	24	0
<i>Caradrina taraxaci</i>	54	43	<i>Calymnia pyralina</i>	17	9
<i>Calymnia affinis</i>	42	16	<i>Caradrina alsines</i>	13	3
<i>Mania maura</i>	34	3	<i>Calymnia affinis</i>	8	2
<i>Cerigo matura</i>	32	0	<i>Tethea subtusa</i>	2	14
<i>Caradrina alsines</i>	14	6	<i>T. retusa</i>	0	4
<i>Tethea subtusa</i>	0	4	<i>Triphæna interjecta</i>	0	2
<i>T. retusa</i>	0	1			

Besides the species enumerated above, a large number of commoner ones also came to the sugar, but very few to the honeydew. Two or three Geometræ visited the latter attraction, and *Zanclognatha tarsipennalis*, *Pyrallis costalis*, and *P. glaucinalis* were common at the sugar. This year honeydew has been excessively abundant, but I cannot suppose that the poor results which have attended sugaring expeditions are directly attributable to this fact. I should say that the scarcity of moths at sugar is not because honeydew proved more attractive, but rather because the meteorological conditions favourable to aphides, enabling them to increase and multiply prodigiously, have been to a greater or lesser extent injurious to moths. It seems only reasonable to assume that to many species of moths occurring in this country abnormal heat and drought are as disastrous as exceptional cold and wet. The observations and opinions of others relative to these matters would be exceedingly interesting.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood.

PACHETRA LEUCOPHÆA IN ENGLAND.—A few years ago an entomological friend showed me a series of six specimens of the above insect, which he had captured on the South Downs, pointing out the spot where he had taken them on condition that I would not publish or otherwise reveal the same. As, however, the locality is one from which this species has been already recorded, nothing is lost to science by my compliance with his wishes, and I only mention the above facts to disclaim any credit for having made the discovery myself. My object in sending this note is to point out that although I have collected this insect in the past, it has hitherto occurred so sparingly that, until now, I had been unable to complete



my own series. This year, however, it was found in sufficient numbers to enable me to fill up my own set and distribute a few pairs among my friends. The South Downs of England are, I believe, the extreme northern limit of its occurrence, and it is doubtless owing to the exceptionally fine and hot spring favouring the growth of the larvæ, that it occurred this year so much more freely than usual. I obtained a large batch of eggs from one of the females, but as I started for a botanical tour in North Italy the very day on which they hatched, the bulk of my larvæ died or ate one another, and I have now but four left.—FREDERICK J. HANBURY; 37, Lombard Street, E.C., August 23, 1893.

THE PLAGUE OF WASPS.—This morning's 'Standard' (August 23rd, 1893) contains an account of the very destructive damage inflicted on the fruit crops in Essex by wasps, and the consequent destruction by gardeners in one neighbourhood alone of 300 nests during the last few days. Mention is also made of an island in the same county swarming with wasps, which instantaneously attack all the food brought by tourists bent on enjoying a picnic there. Not long since, at an open-air tea given by the Salvation Army in the South of England, the wasps covered all the jam, sugar, &c., and stung several of the children; a scene of confusion ensued, and the teachers and conductors of the party were at their wits' end what to do, until they bethought themselves of the expedient of daubing the branches of neighbouring trees all over with the jam, and thus occasioned a diversion thither of the winged pests. Only a few days since, a French gentleman, resident at Chalons-sur-Marne, was engaged in taking a nest in his garden one morning, when he was attacked by a strong swarm, and severely stung all over the head and face. The unfortunate man rushed into his house in a pitiable state and immediately sent for a doctor, but was dead before medical aid, though summoned with all haste, arrived. The unusual number of wasps this year is no doubt attributable to the extreme dryness of the spring, and also to the almost unprecedented length and heat of the present summer. In reference to the 300 nests above mentioned, these probably averaged, on the most moderate computation, 2000 wasps per nest (and a strong nest will frequently reach 4000). But to take the lowest figure, 300 nests containing 2000 each make a total of 600,000 wasps. Now in spite of great care, cost and labour, expended in searching out and destroying, when summer is well advanced, the nests that send forth their hordes to our orchards and wall-fruit, several nests are nearly sure to escape observation, and it is equally certain that there will be numerous absentees when any particular nest is taken. The easiest and most efficacious method is, if possible, to catch the mothers of the very numerous progeny, the queens, as they flit about a sunny bank in April, before they are permanently located inside their self-chosen domicile. I adopted this plan in 1888, capturing 25 queens, chiefly in the direction of Dudden Hill, 22 of *Vespa germanica* and 3 of *V. vulgaris*; and a marked diminution of wasps was observable in Kilburn last summer. If my memory serves me right, 1852, 1853, 1854, and 1856 were all seasons remarkable for the abundance of wasps. Gas tar, paraffin, lighted straw, and boiling water, may be quoted among the various methods resorted to for destroying the nests, the two last named being probably the least efficacious. Personally, I believe there is no plan better than the old-fashioned one of a coarse rag folded many times, with a layer of sulphur between each fold, stuck deep into the hole at dusk, and then to ignite the end, and to blow long,

slowly, and steadily with bellows. I have myself taken many nests in this way. As a rule, the numerical strength of the nest will be found to correspond to the size of the hole, a weak nest being entered through only a small aperture.—F. A. WALKER, D.D.; Dun Mallard, Cricklewood.

## CAPTURES AND FIELD REPORTS.

**COLIAS HYALE AT CHICHESTER.**—On August 14th my brother, Mr. F. Anderson, took two fine *Colias hyale* in a clover field here, and owing to the cane unfortunately slipping out of the net, and a high wind at the time, which carried the insect out of sight, missed another. On the 16th another specimen was captured. Any notes respecting the genus *Colias* will this year be especially interesting and valuable, after the abnormal abundance of *Colias edusa* in the preceding. It is very remarkable that up to the present time not a single *Colias edusa*, nor its variety *helice*, has been seen here; in marked contrast to the swarms of last autumn. Equally singular too is the absence of the *Vanessas*,—*atalanta*, *io*, *cardui*, and *urtice*, and of *Plusia gamma*.—JOSEPH ANDERSON, Jun.; Chichester, August 17, 1893.

**COLIAS EDUSA IN CAMBRIDGESHIRE.**—On Friday, August 18th, I was walking across a stubble-field about 6 o'clock in the evening, when a specimen of *Colias edusa* flew up in front of me. I had not a net with me, but I captured it under my hat. It was a male.—(Miss) M. WILSON; The Vicarage, Guilden Morden, Royston, August 21, 1893.

**VANESSA C-ALBUM, &C., AT CHEADLE.**—I have just returned from a few days' visit to a place near Welshpool, where I have been taking *Vanessa c-album* in fine condition, and a second brood of *Lycæna argiolus*. *Amphipyra pyramidea* came freely to sugar.—E. W. H. BLAGG; Cheadle, Staffs., July 27, 1893.

**ACHERONTIA ATROPOS.**—Last week I received two fine larvæ of *Acherontia atropos* from potato gardens here, and being full-fed they at once buried in the cocoa-nut fibre provided for them. As I have not previously bred this species, I shall be glad to know if it would be better to force them in the spring or to leave them to come out naturally.—DOUGLAS H. PEARSON; Chilwell, Notts, August 12, 1893.

[Possibly the imagines may emerge in September or October.—ED.]

**ACHERONTIA ATROPOS.**—I bred a fine female of this moth from a larva found on potatoes on August 5th, 1892. It was a very noisy insect, protesting vigorously with loud squeaks when handled whilst being chloroformed. On the 12th July last, a larva was brought me, which went to earth immediately on being placed in the flower-pot.—JOSEPH ANDERSON, Jun.; Chichester, August 17, 1893.

**GNOPHRIA RUBRICOLLIS, L.**—What is the usual time of appearance of this species? According to Newman the moth emerges in August, and a writer in the 'Entomologist' for February last (p. 52) states that it used to be taken in Gloucestershire in that month, but that it was taken in June last year in Somerset. I can vouch for its still earlier emergence, as my



brother and I took two specimens of the moth on the 22nd and 23rd May last at Newball, Lincolnshire. — J. W. CARR; University College, Nottingham, July 27, 1893.

*PLUSIA MONETA* AT SOUTHBOROUGH, TUNBRIDGE WELLS.—I have much pleasure in again recording the capture, and also the breeding from larvæ, of *P. moneta*. I was fortunate in obtaining a brood of larvæ from monk's-hood on April 17th, from a friend's garden; but I am very sorry to state that the percentage of imagines bred was very small, owing to my neglect in not keeping the pupa moist enough during the very hot weather we had in May. Both captured and bred specimens, I am pleased to say, are of full size. Before concluding, I should like to note that the pupa is parti-coloured, the upper half is glossy black, and the under half pale green. I do not think this has been previously mentioned. — M. M. PHIPPS; Southborough Brewery, Tunbridge Wells, August 11, 1893.

*MACARIA LITURATA* IN MIDDLESEX.—This species may be added to the list of moths taken in Middlesex. I captured one in this garden on 16th of this month, near a Scotch fir. I may mention that the fir-tree is quite isolated, and I am not aware of any other in the neighbourhood. [See also *ante* p. 251.—ED.]—C. A. BIRD; Rosedale, 162, Dalling Road, Hammer-smith, W., August 22, 1893.

NOTE ON *TORTRIX SEMIALBANA*.—I have the pleasure to record the capture of *Tortrix semialbana* in June last. Although scarce in the locality, it is interesting to know that the species is still in existence, and by closely searching the locality a few times I was enabled to capture a sufficient number to complete my series. It is very secluded in its habits, and when disturbed simply falls upon the upper side of the leaves exposed to view. Very few of the specimens I captured flew any distance when disturbed.—W. PURDEY; Folkestone, August 20, 1893.

*STIGMONOTA RAVULANA*.—I have discovered a specimen of this *Tortrix* among my captures this year. It was netted in May, but I had overlooked it until I was taking my specimens off the setting-boards. I have not taken this species for years, and as far as my experience goes it is scarce in this locality, although I have searched for it at convenient times. — W. PURDEY; 129, Dover Street, Folkestone, August 23, 1893.

THE EARLY SEASON :—May 28th, *Platytes cerussellus*; June 9th, *Halía vauaria*; 13th, *Cidaria populata*; 14th, *Hylophila prasinana* (worn); 16th, *Argynnis aglaia* (abundant); 21st, *Epinephele hyperanthus* (abundant), *Crambus pinetellus*; 26th, *Crocallis elinguaría* (worn), female deposited ova; 29th, *Thecla quercus*, *Melanargia galatea*; 30th, *Epinephele tithonus* (abundant), *Vanessa io*. July 13th, *Argynnis selene* (second brood), *Amphipyra pyramidea*, *Hydræcia micacea*; 20th, *Leucophasia sinapis* (second brood).—JOHN N. STILL; Bridestowe, Devon, August 5, 1893.

The following is a list of Lepidoptera observed this year at or near Hereford :—March 12th, *Pieris rapæ*; 28th, *Xylocampa lithoriza*; 29th, *Lycæna argiolus*. April 5th, *Pieris napi*, *Saturnia carpinii*; 6th, *Coremia unidentata*; 7th, *Argynnis euphrosyne*, *Syrichthus malvæ*, *Euchloë cardamines*; 8th, *Amphidasys prodromaria*, *Hadena suasa*; 10th, *Pieris brassicæ*, *Leucophasia sinapis*, *Pararge egeria*, *Arctia fuliginosa*; 14th, *Lobophora lobulata*; 17th, *Melanippe fluctuata*; 19th, *Acidalia remutata*, *Abraxas ulmata*, *Hemerophila abruptaria*, *Ciliæ spinula*; 20th, *Nisoniades tages*,



*Pararge megara*, *Cremia propugnata*, *Venilia maculata*, *Numeria pulveraria*, *Corycia temerata*; 22nd, *Nemeobius lucina*, *Tephrosia punctulata*, *Ephyra punctaria*, *Fidonia atomaria*, *Lomaspilis marginata*; 25th, *Thecla rubi*, *Cænonympha pamphilus*, *Arctia mendica*, *Asthena candidata*, *Cabera exanthemaria*, *Euclidia mi*, *E. glyphica*, *Phytometra ænea*; 26th, *Melanippe subtristata*, *Plusia gamma*; 29th, *Platypteryx hamula*, *Iodis lactearia*, *Minea euphorbiata*, *Eubolia palumbaria*; 30th, *Heliodes arbuti*. May 2nd, *Eupisteria heparata*; 3rd, *Epione vespertaria*, *Melanippe hastata*, *Emmelsia albulata*, *Dasychira pudibunda*; 4th, *Melanippe montanata*; 8th, *Lycæna icarus*; 9th, *Hesperia sylvanus*, *Lycæna medon*; 12th, *Procris geryon*. June 1st, *Acidalia aversata*; 17th, *Vanessa c-album* (early brood); 22nd, *Hesperia linea*. August 17th, *Xanthia silago*; 18th, *Vanessa c-album* (late brood); 19th, *Neuronia popularis*; 21st, *Xanthia cerago*.—F. L. BLATHWAYT; Hereford, August 21, 1893.

NOTES FROM READING.—On March 7th *Cymatophora flavicornis* was certainly worn; *Brephos parthenias* was out the same day and fresh; the next day it was common. On April 3rd I took *Endromis versicolor* from birch. *Saturnia carpini* was flying over the heath on the 7th, *B. parthenias* still being on the wing. Tuesday, the 18th, *Phytometra ænea* was taken; on the 19th *Demas coryli* and *Tephrosia consonaria*; 20th, *Lithosia aureola* and *Orgyia pudibunda*. On the 25th *Leucophasia sinapis* and *Argynnis euphrosyne* were fully out. On May 2nd, from beech trunks, I took two dark forms of *Stauropus fagi*; this is ten days earlier than last year. On the 3rd *Ephyra omicronaria*, *Lomaspilis marginata*, *Minea euphorbiata*, and *Melanippe hastata*; the 6th *Lobophora viretata*. On the 11th and 12th *M. hastata* was flying freely in the sunshine. The 22nd *Hypsipetes impluviata* appeared, while *L. sinapis* had almost ceased flying. On the 29th *Asthena blomeri*, *Abraxas ulmata*, and *Hepialus vellela*, were taken. June 6th *Eucosmia undulata*, *Lobophora sexualisata*, and *Eupisteria heparata*, the latter much worn. My friend Mr. Holland and self tried sugar this night, but it turned out a dismal failure. On the 29th *A. blomeri* was still out and fresh, but only a few worn stragglers of *A. ulmata* were left. On July 1st *Macroglossa stellatarum* was about in unusual numbers. On the 2nd the second brood of *P. ænea* and *L. sinapis* had appeared; the same day I netted my first *G. rhamni*, and *Vanessa polychloris* was ragged. On the 9th *L. sinapis* and *Boarmia roboraria* were worn, while *V. polychloris* had disappeared for the season. The second broods of *L. marginata* and *Ephyra pendularia* were out this day.—J. CLARKE; Reading, Aug. 22.

BRACON SCUTELLARIS, Wesmael, AT PLUMSTEAD.—Amongst the very few entomological rambles that I have been enabled to enjoy this season, was one paid to the banks of the Thames at Plumstead, on June 1st, when it was my pleasure, while sweeping the rushes, &c., that are getatable at low water, to capture, amongst other things, several good species of Braconidæ, one of which did not seem at all familiar to me. I at first thought it might be *B. erythrostictus* of the Rev. T. A. Marshall's 'Monograph,' 1885, but on referring to his description I found it did not agree. I sent it on to that gentleman, who, with his usual kindness, at once identified and returned it to me as *Bracon scutellaris*, Wesm., the second known capture in this country, he forestalling me by taking one specimen last year in a wood in Cornwall. This species has, however, never been recorded as British; hence, perhaps, I may be forgiven for making this species known as a native of these Isles. The other species of Braconidæ taken were a

male and female of *B. colpophorus*, Wesm., not at all a common species; *B. fuscicoxis*, Wesm.; *B. stablis*, Wesm., both sexes, and which Mr. Marshall says is uncommon; also several specimens of *B. regularis*, Wesm., which seemed to me to be fairly plentiful, although Mr. Marshall, in his 'Monograph,' speaks of only two males as being taken by himself, while Mr. Fitch has taken females at Maldon.—T. R. BILLUPS.

BRACON OSTMAELII, Wesmael.—This is another previously unrecorded species, taken by myself at Oxshott, in the month of July of last year. It is only right to say that this species has been known as British to the Rev. T. A. Marshall for several years past, but, like the preceding species, has been reserved with a number of other things to be described in a Supplement to his valuable 'Monograph,' whenever that may be called for. Amongst other good things taken at the same place were a male and female of *B. roberti*, Wesm., and a solitary female of *Chelonus latrunculus*, Marshall.—T. R. B.

ERRATUM. — Page 251, for "*Tortrix tenebrata*" read "*Heliaca tenebrata*."

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## SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 27th*, 1893.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. A. Robinson exhibited a magnificent series of *Callimorpha hera*, L., bred from ova obtained from a female captured in Devonshire in August, 1892. He pointed out that the hind wings showed three distinct varieties of coloration, namely, the typical scarlet, the var. *lutescens*, and an intermediate orange colour, the relative numbers of each being about equal; he also mentioned that among those he bred a large number were deformed in the hind wings, and principally in the left one. Mr. Robinson also had two specimens of *Dicranura bicuspis*, Bork., from Tilgate Forest, in one of which the dark colour was absent from the central fascia and apical patch, thus giving the insect a remarkably pale appearance. Mr. Turner exhibited a fine series of *Pempelia palumbella*, Fb., from Oxshott; also a few extreme forms of *Thera variata*, Schiff., bred from various suburban localities, one being almost unicolorous, and *T. firmata*, Hb., &c. Mr. Dennis, a box of *Thecla betulæ*, L., bred at the end of June, from larvæ taken in Epping Forest, one having the orange band somewhat smaller than usual. Mr. R. Adkin exhibited a short series of *Smerinthus populi*, L., bred from larvæ taken last autumn in Sutherlandshire; the majority of the specimens were of the usual Scotch form, but in one the prevailing colour was a pinkish grey, and closely resembled two others from the New Forest and Lewisham respectively, which were shown for comparison; also three *Smerinthus ocellatus*, L., bred from larvæ found in his garden at Lewisham, one of them having the ground colour unusually pale, thus giving the insect a particularly bright appearance. Mr. Barrett exhibited the larvæ belonging to the *Diurnea* group, referred to by him at the last meeting, and made some comments thereon. These larvæ, if not actually still alive, were in a state of very fresh preservation, and Mr. Weir said he thought there was hardly any doubt about their having been stored by one of the mason wasps, as food for its young. Mr. H. Williams exhibited five pupæ of *Leucophasia sinapis*, L., for the purpose of showing the gradual development of the perfect insect, and mentioned that the black tip showed



through the pupa-skin only a very few hours before emergence. One of the specimens in which it had become visible during the afternoon, emerged during the course of the evening. The average dates were—ova laid 26th May, hatched 6th June, the first pupating on the 9th July. Mr. Step exhibited the following species of galls from Epsom, viz., *Andricus fecundatrix*, Htg., *Neuroterus lenticularis*, Olivier, *Andricus ostreus*, *Cynips kollari*, *Rhodites nervosus*, Curt., *R. rosæ*, Htg., *R. eglanderia*, Htg. Mr. Step expatiated upon the advantages of studying the Phytophagous Hymenoptera, and a discussion ensued, in which Messrs. Step, Barrett, Weir, and others took part.

*August 10th.*—The President in the chair. Mr. Weir exhibited some cases which had been found under a sycamore by a neighbour of his, Mr. Tolhurst, at Beckenham. He said that attention had been called to these cases by seeing them hopping over a gravel walk, a power which they retained for some days after they were obtained. The cases were circular disks about 13 mm. in diameter and had been made from the upper cuticle of the sycamore leaf, forming one side, and silk the other. Upon examining the leaves of the tree, the round spots from which the cases were partly formed were plainly visible, and also the large blotch from which the larva had eaten the parenchyma. It was at first thought that they might be the cases of a *Tischeria*, but they had since been identified by Mr. McLachlan as the work of a sawfly, *Phyllotoma aceris*, a somewhat detailed life-history of which is given by Charles Healy, 'Ent. Mo. Mag.' iv. pp. 105–107 (1867). The President also exhibited nearly adult larvæ of *Hemerophila abruptaria*, and drew attention to the fact that two pairs of prolegs were, as usual in Geometers, fully developed, and that there were also two other imperfect pairs in front of these. He considered these very imperfect prolegs to be vestigial. Mr. Frohawk exhibited specimens of *Macroglossa bombylifomis*, together with a species of humble-bee, which it mimics, both captured in company over rhododendrons in the New Forest, 21st May last. Mr. Robt. Adkin exhibited a specimen of *Sesia asiliformis*, Rott. (*cynipiformis*, Esp.), that he had reared from a pupa received from the neighbourhood of Abbot's Wood, and pointed out that the colour of the band of the left fore wing was yellow instead of red; and that the narrow costal streak of the same wing, although red at the base, assumed the yellow coloration for a considerable portion of its length, the red gradually giving way to the yellow. He regarded this specimen as of some interest, as being another example of the change of colour from red to yellow in the Sesiidæ, and, he believed, in a species where the change had not been previously noticed. He also exhibited a series of *Spilosoma lubricipeda*, Esp., the descendants of Barnsley ancestors, and he believed the same stock from which the extreme radiated forms reared in some numbers of late had sprung, but in the most strongly marked specimens of the series now shown the tendency of the spots to become elongated was not great. Mr. Oldham exhibited series of *Sphinx ligustri*, *Apamea ophiogramma*, *Calymnia affinis*, and other species chiefly taken at Woodford. The remainder of the evening was occupied by a discussion on the relative abundance or scarcity of Lepidoptera since the excessively hot weather of the past spring, in which Messrs. Weir, Oldham, Hall, Winkley, Frohawk, Adkin, Waller, and others took part, the consensus of opinion being, that with one notable exception,—namely, *Polyommatus phlæas*, which had been more or less abundant throughout the time from April last,—Lepidoptera generally had been below the average in point of numbers.—H. WILLIAMS, *Hon. Secretary*.



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## *EPINEPHELE HYPERANTHES*, VAR.



THE above figure represents a female example of an uncommon variety of *Epinephele hyperanthes*.

Mr. Weir captured a specimen of this form in the New Forest in 1878, and one or two specimens have since been taken in the same district. In his interesting remarks on this aberration, which he terms the lanceolate form, Mr. Frohawk (Entom. xxv. 215) states that in 1891 he captured a typical female specimen of *E. hyperanthes* in the New Forest, and from ova which she deposited he obtained seven imagines in 1892. Three of these (two males and one female) were somewhat similar, as regards markings, and the female specimen, here figured, Mr. Frohawk says is the finest example of this particular form he has yet seen.

It is probably well known that the ocellated markings of this species are subject to considerable variation in the matters of number, size, and definition. As a rule, there are three well-formed ocelli on the under surface of fore wings and five on that of hind wings, but these are either not present at all or only slightly indicated on the upper surface of the wings. Occasionally specimens, generally females, occur with three well-marked ocelli on fore wings and two on the hind wings, whilst on the under surface the hind wings have an additional ocellus, thus increasing the number to six. Sometimes the yellowish irides are abnormally

wide on the under side, and a figure of such a variety will be found in the 'Entomologist,' vol. vi. p. 417.

Perhaps the variety most frequently met with is that known as var. *arete*. In this form the ocelli on under surface of all the wings are represented by white spots, the pupils, in fact, of the ocelli, the other parts of these eye-spots having disappeared more or less completely. The application of the name *arete* is not, however, generally confined to this particular aberration, but is understood to embrace all the various modifications between specimens in which the ocelli are smaller than usual and abnormal in number, and an extreme form in which every trace of an ocellus has vanished from both surfaces of all the wings.

RICHARD SOUTH.

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### BREEDING EXOTIC BOMBYCES IN 1893.

BY JOHN WATSON.

THE season 1893 will be long remembered, I think, by those who devote some portion of their entomological energies and time (a rapidly-increasing fraternity) to breeding the silk-spinning Lepidoptera of other and warmer climes than our own. An almost tropical summer has been most advantageous to the welfare of the larvæ, especially in the open air, and under cover has brought the larvæ on with almost (at all events to me) unprecedented speed. As far as my experience goes, I never had so successful a season. Commencing with the pairing of the moths, I find that heat is more conducive to a successful pairing. I have had no difficulty in obtaining pairings with *selene*—a species by no means easy to pair in our very precarious climate. I have to record the mating twice—*e. g.* two successive nights—of one pair of this species. In *Attacus cynthia* I also had a pair which separated after copulation, about seven o'clock in the evening; and looking at them about nine o'clock, I was astonished to find them again mated. The ova were fertile, of course. This instance led me to put the next male I had out with two females on successive nights, and was most astonished to find the male, two hours and a half only after separation from the first female, pair with another fresh one, and the ova from the second pairing were as fertile as from the first one.

My importation of *selene* came to hand late this season, and as a result a number of them emerged on the way, having been hastened, no doubt, by the excessive heat in the Red Sea and Mediterranean. There were a very large number of eggs laid by the moths on the top of the cocoons; and in the space between the box-lid and the cocoons (caused by the falling of the cocoons

during transit) were a number of the moths. I collected the ova, and afterwards was surprised that some of them hatched, and calculation showed that they must have been fertilized while in the post-office.

P. H. Gosse says, in his 'Monograph of the Atlas Moth (*Attacus atlas*),' that the longer the larval period is protracted, the weaker the larvæ naturally become. This I find is so, and so my larvæ must perforce be healthy, as they spun up in much shorter time than they have hitherto done. The most noticeable in this respect was *selene*, which this season I bred, both in the open air and under cover, on the common willow, and have in the garden one or two in the last age, which emerged July 23rd, forty-three days old. I am leaving these out, but I am afraid, if we get a few cold nights similar to what we had last week, the larvæ will die; in the mornings now they seem very loth to move. Those I bred under cover of this species, also on willow, fed and spun-up in thirty-one to thirty-four days, from hatching of the eggs. The table of moults is as follows:—

Emerged	July 17th.
Spun up for 1st moult, July 21st; moulted, „	23rd.
„ „ 2nd „ „ 27th; „	29th.
Two moulted on 28th, after 35 hours' quiescence.	
Spun up for 3rd moult, July 30th; moulted, Aug. 1st & 2nd.	
In the 4th age, at 16 days old—	
Spun up for 4th moult, Aug. 8th to 9th; moulted, Aug. 11th & 12th.	
Some others took a week longer than this.	

The earliest larvæ commenced to purge on Wednesday, the 16th, and spun up on Thursday and Friday, the 17th and 18th August, pupation taking place about the 23rd.

*Antherea yama-mai* (Japan), fed on oak, spun up in fifty-six days from hatching of the ova, and emergence of the moths took place rather irregularly from thirty-seven days after pupation till now, and even some have yet to emerge.

In 'The Yama-mai' (1866), by Ward, the larval life is computed at sixty-four days; so mine were a week earlier,—the result, I have little doubt, of the hot season, as I have invariably found larvæ eat more in hot days. One of the moths I have had out is of a most delicate yellow, a clear bright mustard-colour above and rosy brown below, with, in some lights, a bluish gloss in the dark portions.

Amongst other things, *Attacus cynthia* I also fed upon willow in the open air, and in this species I have an instance of their very polyphagous character. My fellow-entomologist, Mr. Paul Schill, of Didsbury, who has also been breeding a large number of Bombyces in the open air, put a number of larvæ of *cynthia* out on a small hedge of lilac in the grounds of Fairoak, and to keep the larvæ at the end of the hedge, so as not to wander all over it, a muslin partition was intervened. The lilac had a background



of hollies, and a number of the larvæ wandered off the lilac and ascended the hollies, and there fed and spun their cocoons, eating the fleshy parts and veins of the leaves, and rejecting the hard, almost chitinous edges and spines, exactly as is done by the Geometrid larva, *Odontoptera bidentata*, when it feeds on holly. Owing to the phenomenal abundance of wasps, there was a goodly number of them eaten by these "yellow stripes." Mr. Schill was, for a time, under the impression that they had been falling and wandering, as there was an increasing diminution of them; but at last he was lucky enough to catch a wasp seated upon the back of a fine larva, eating its evening meal, for some minutes. Of course they were then taken in, but afterwards the cocoons of those on the hollies were noticed and gathered. I have reared this species on privet, willow, hawthorn, lilac, laburnum, *Ailanthus glandulosa* (its favourite and natural food), and *Ricinus*; now it will also feed on holly.

*Antherea pernyi* were also placed upon oak trees, and did well till the blackbirds found them and ate a number of them (none of the larvæ were netted over), and they were promptly taken inside and spun up very quickly. Next season they will be netted over. Some of the imagos have appeared (in a good season I have bred two broods), one female having a distinct lobed ocellus on the secondaries, and a brown line running from the costa of primaries to the ocellus (similar to *Actias luna*).

Of course I am quite aware that these species have been bred in the open air before, but I think not in the vicissitudes of the Manchester district, where there is so much rain and cold winds. Indeed, had it not been a very exceptional year, they would not have been able to live up to spinning. I lost a number of the *selene* (from inside) from a disease which I have been unable to make out. The infected larvæ did not at all become "peppered," like pebrinous ones, nor did they become diarrhœous as in flacherie; larvæ apparently healthy in the morning would be found on the floor in the evening, and dead the next morning. I microscopically examined the fluid contents of the bodies of a few of them, and found therein a large number of jointed cane-like filaments connecting and ramifying through a largish micrococcus-like elliptic or nodular body.

I prepared a culture in Pasteur's fluid, but in my absence it was accidentally overturned, the tube broken; and when I returned there was no chance of obtaining another culture, as the floor had been cleaned up with that greatest of disease preventives, good carbolic soap. I am not acquainted with Muscardine nor its lesions, so it may be this most fell destroyer.

LIFE-HISTORY OF *LYCÆNA ÆGON*.

BY F. W. FROHAWK, F.E.S.

ON the 18th of last March, my friend Mr. G. Bryant very kindly sent me some ova of *L. ægon*, which he had succeeded in obtaining from females captured the previous summer. I am also indebted to Mr. F. W. Hawes for information relating to his success in rearing this species last year, attained by feeding the larvæ upon gorse (*Ulex europæus*).

The ovum is of a very compressed spherical form, its greatest diameter measuring one-fortieth of an inch, and only one-eightieth of an inch in height; the base is slightly concave, the crown being more so, and the operculum is deeply sunken and very finely punctured; the punctures are smallest in the centre, increasing in size on nearing the side, where they develop into a very beautifully formed pattern resembling fine lace-work, composed of a number of prominences placed at somewhat regular intervals and connected one to another by six keels or spokes, the interstices between each being very deep; the reticulations again lessening in size on nearing the under surface, which is likewise deeply punctured of a spongy character. Both the colour and texture greatly resemble white porcelain; all the depths produce a deep purplish grey shade. The ova are deposited singly, and adhere firmly to the receptacle.

The first eggs hatched on April 1st, the remainder hatching the two following days. The larva makes its exit by eating away a small round hole in the crown of the egg, which has the appearance of a small black dot, otherwise the ova remains unchanged in colour.

Directly after emergence the larva measures one-twenty-fourth of an inch long, and is rather stout in proportion; the colour is pale ochreous green, darkest on the dorsal surface, becoming paler laterally and palest on the ventral surface. The body is sprinkled with dark brown warts, some extremely small; the largest are those on the dorsal area, and these emit long greyish hairs curving backwards, excepting those on the first segment, which curve forwards; the other warts principally run in longitudinal rows, forming superspiracular and subspiracular series, each wart emitting a fine greyish hair. The head is black, the legs brown, and the claspers of the same colour as the ventral surface. Upon emergence I placed the larvæ inside the expanding gorse blossoms, and shortly after noticed them feeding on the tender portions of the stamens and petals.

The first moult took place at the end of April, remaining nearly a month in the first skin. After the first moult, when thirty days old, it measures one-twelfth of an inch in length; the back is arched, the sides very sloping, and the ventral surface



much flattened. The head is shining black, and while at rest it is completely withdrawn under the large overlapping anterior segment; it is only protruded while feeding, and partially so when crawling; during its progress the head is kept in incessant motion waving from side to side. The colour of the body is pale ochreous, with medio-dorsal, subdorsal, and lateral dark chocolate-brown longitudinal lines, each being bordered by a whitish buff line; the whole surface is sprinkled with dark brown warty discs, flattened and semitransparent on their summits; there are also longitudinal rows of greyish green short tubercles, each emitting a curved whitish hair. The legs are black, and the claspers ochreous; on the anterior segment is a dark purplish brown dorsal blotch. The stamens and petals of the flowers still form their only food, some of the blossoms having the petals thickly perforated by them. The larva is extremely sluggish in its movements.

On June 1st, I carefully examined all the larvæ I had feeding, and found them in various stages, and varying from one-tenth to three-twelfths of an inch in length; two were in their second skin, about half had moulted twice, and the remainder had moulted for the third time. They all very closely resembled each other in their different stages, but after the third moult the colouring is more vivid. After the second moult it is precisely similar to its previous stage, excepting the advanced growth, measuring one-sixth of an inch in length. After the third moult it is a quarter of an inch long. Colour pale greyish green, with a dark chocolate-brown medio-dorsal stripe bordered on either side by a white line and a double grey-green (darker than the ground colour) subdorsal stripe composed of two slightly oblique marks on each segment, each bordered above by whitish; a lateral dilated white stripe bordered below by an olive band; the under surface is grey-green. The head is small, intensely black and shining; the large compressed anterior segment has a conspicuous chocolate-brown patch in the centre. The body is clothed in exceedingly fine short hairs; those on the dorsal area are the longest, and curve backwards. They still continued feeding upon the blossoms.

During the first week of June a few moulted for the fourth and last time, and the first became full-grown about June 20th. When full-grown it measures while at rest half an inch in length; the anterior segment is projected, flattened and rounded in front, completely concealing the head; from the second to ninth segments (both inclusive) the back is considerably elevated, and the segments of uniform size, their sides are flat and sloping to the lateral dilated ridge, the second segment rising abruptly above the first; the last three posterior segments are flattened, especially the last, which terminates in a broad rounded flap much compressed, similar to the first segment; the eleventh segment is



furnished with two retractile tubercles, which are occasionally thrust out when it is suddenly alarmed, otherwise they remain withdrawn, forming short blunt processes; the tubercle is pale straw-yellow in colour, and surrounding the apex of the sheath is a series of black warts, each terminating in a short spine resembling a thorn. The ventral surface of the larva is much flattened, and while resting it lies so flat that the legs and claspers are almost hidden; the head is very black and shining. The ground colour of the body is very pale green, a dark purplish medio-dorsal stripe runs the entire length; it is broadest on the first segment, and is bordered on each side by a white line, then a pinkish and green band blending into the pale green of the ground colour, followed by a conspicuous subdorsal dark green stripe, composed of a series of rather oblique marks, one on each segment, and a somewhat similar stripe, but narrower, runs parallel to it immediately above the spiracles; a subspiracular dark green stripe, bordered below by a white stripe, passes along the lateral ridge, which borders on the green of the ventral surface; the spiracles are white; the entire surface is thickly sprinkled with black and white granulations, the white ones predominating, each granule emits a very minute fine ochreous hair, those along the dorsal surface are the longest and stoutest. The legs are greenish, and the claspers green and brown-pink; the segments are strongly defined, and somewhat overlapping.

Another form of the larva, which appears of almost equal occurrence, has the first subdorsal and subspiracular stripes lilac-red, and generally the ground colour is more tinged with olive, giving the whole a decided reddish hue.

The larva in all its stages is very sluggish in its movements; it has a slow gliding motion, continually protruding and withdrawing its head, and waving it to and fro during progression. It feeds upon the gorse blossoms as long as it remains in bloom, and when they cease it readily takes to the young and tender spines, which formed the sole food of the larvæ during their last stage. The larvæ in their earlier stages closely resemble in form and colour the small brown bracts of the bloom. The first pupated on June 22nd.

The pupa measures four-twelfths of an inch in length. Dorsal view: it is widest across the middle of the abdomen; the head is rounded; base of the wing is slightly angular and prominent, the wing curving gently over the side of the abdomen, and is rather swollen; the abdomen is attenuated to the anal extremity. Lateral view: head rounded; thorax rounded and swollen, and nipped in behind; the abdomen is swollen about the middle and curves to the anal segment, which is blunt, rounded, and furnished with hooks; the wing is a little swollen near the apex. The whole surface is smooth, but not very shining. The colour is pale ochreous green; the abdomen is darker olive-green; head and

anal segment only very slightly tinged with green; the wing shades into whitish at the apex, and is semitransparent; spiracles are brown; a dull brown medio-dorsal streak traverses the abdomen, and terminates in a dark spot on the seventh abdominal segment. Such is the description when twelve days old.

About three days before the emergence of the imago the pupa begins to deepen in colour, gradually changing to a dark leaden-grey, and finally the wings assume the colouring of the imago, but of course of a paler hue; the neurulation and dark marginal band of the wing in the male specimens show very clearly. The pupa apparently is not attached by the anal hooks, my specimens being merely suspended by a few strands of silk spun around them to a stem of the plant close to the earth. The first, a male, emerged on July 10th.

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## TWO DAYS AT ABERSOCH.

By J. ARKLE.

IN the midst of the continued drought and heat which will mark the summer of 1893, I left Chester by an afternoon train, June 9th, for Tan-y-Bwlch. There I was to enjoy, once more, the hospitality of Mr. W. J. Kerr, and, on the morrow, journey on with him to Abersoch. Our object was *Zygæna pilosellæ* (*minos*). All my efforts to obtain the insect from this locality had failed, and I had therefore scanned—and endeavoured to scan between the lines previous to my departure—all available literature on the little burnet. The result was, granting the early season would not be against us, that I began my long railway ride in all confidence. And what a lovely ride—all along the Dee valley, and beyond! All through the Vale of Llangollen, and up the steep to the river's source in Bala Lake; then higher and higher until the train reached the top of the watershed at an altitude of 2800 ft. above the sea; and, lastly, down into the Tan-y-Bwlch Valley with which the Vale of Llangollen, lovely as it is, absolutely sinks in comparison. The whole ride is through greenest field, or shady, scented fir-wood; by river pool with coracle; or past crag and heath, where the early heather-bells peep in through the carriage window. And there is much more of floral ornament. Look across the river on the famous birch grove, as the train stops at Berwyn in the Vale of Llangollen! Observe the tall foxgloves all along, and the fringe of tongue-fern here and there at the foot of the débris! The climax is reached with the grand Vale of Tan-y-Bwlch, its meandering river, natural oak woods, and all shut in by some of Cambria's highest mountains. Here and there among these woods are open spaces fringed with birch, and in one of these, in the Plas grounds, after



dusk, my friend and I found ourselves, net in hand. A fairy spot—and it looked as if the fairies had just left it at the approach of mortals. Here and there were numerous glow-worms (*Lampyrus noctiluca*), looking like fairy lamps left in hasty flight. We had no difficulty in taking both sexes. It was rather early, in even this forward season, for *Geometra papilionaria*. Other moths, however, were abundant, such as *Metrocampa margaritaria*, *Macaria liturata*, *Larentia viridaria* (*pectinitaria*) and *Xylophasia rurea*; but our best capture was a fine specimen of *Lithosia mesomella*, probably the first record of the insect for North Wales.

We were up early and away next morning. A look into the garden showed the early character of the season. Here were gooseberries ripe, and currants—black, white, and red. Our drive lay under the shady oaks of the Tan-y-Bwlch Valley to Penrhyn Deudraeth, where we caught the train for Pwllheli. There is, after all, something luxurious in a well-appointed Welsh car, with a quick, easy and shapely stepper in the shafts, and a Jehu in front who knows his business. Very different was my solitary progress from Pwllheli to Abersoch three years ago, a progress which might be described, in the language of the politician, as one of leaps and bounds. In weather like ours there is much along this interesting road to occupy the mind. Here, a mile away from Pwllheli, a pile of rock looks like a miniature Gibraltar. It is crowned by a castellated building, and, no doubt, if the enemy would kindly attack in front, it could defy all comers. Lots of the summer brood of *Vanessa urticae* flitted about the road, and we looked admiringly on the numerous *Argynnis aglaia* which scoured the fern-and-bramble-clad banks along our way. Whites, too, were well represented, such as *Pieris rapae* and *P. napi*. The marshy flats were clothed with the sabre-shaped leaves of the common iris, surmounted by its glorious yellow flowers, while, here and there, were red blossoming beds of ragged robin, suggesting *Dianthæcia*.

Abersoch was soon reached, and we at once took up our quarters in the only hotel, St. Tudwal's, a very comfortable place. At lunch we met an elderly gentleman, a young one, and a young lady. They were botanists, and, in conversation, it leaked out that we were in search of *Z. minos*. Four of us, therefore, repaired to the "cliffs" as soon as possible. To our disappointment we found all our search fruitless, and that *Z. minos* was not everywhere. That is so. Its existence is a very local one, and, for certain reasons, precarious. Therefore it is to be hoped it may be allowed to continue, practically an insect preserved. To my friend belong all the honours of our discovery, and, when we returned to our hotel in the evening, he had secured one specimen. On our arrival we were informed that another entomologist had turned up, Mr. E. W. H. Blagg. We were in



luck. For is it not written in the chronicles of *Z. minos* that there is Blagg's as well as Oldham's ground! Though the season was in reality over, we took, with the kind assistance of this gentleman, exactly twelve examples of the moth. Visions of friends in want of a series had therefore to fade, for the time.

In the following comparison which I am able to make between Abersoch and Irish *Z. minos*, it will be well to bear in mind that my observations are based on a limited number of specimens, and that these were in no case fresh from the chrysalis. In this latter respect, however, they were probably equal, and, from the quiet flight and habits of the moth, I am inclined to infer that it does not become much rubbed or chipped. Nevertheless, the comparison is not expected to be conclusive. In general size, semi-transparency, and length of wing, I find the specimens alike. The red in the Irish is more scarlet,—brighter; in the Abersoch form this colour is more of a magenta-pink. In both the broad, red, forked area of the upper wing is the same. The lower wings of the Irish specimens are entirely red, except the narrow black margin; in those from Abersoch the red appears to shade off just below the middle, smoky black faintly taking its place. There is, I am well informed, a very dark variety to be obtained at Abersoch. In short, the Irish insect appears to be a *brighter-coloured one* than the Welsh.

It may now be interesting to note what other insects we saw at Abersoch. *Lycæna ægon* swarmed on the heaths and sandhills. In the evening, at 7 o'clock, they were all conspicuously at rest, and I counted two dozen on a square yard of maritime grass. It is a fact worth recording that this butterfly, all along the north-west coast of Wales, is larger than the inland form; in fact, until I saw my mistake, I found I was passing over the Abersoch specimens as *L. icarus (alexis)*. The Delamere insect is much smaller, and so is the form on the North Lancashire mosses. *Satyrus semele* was everywhere on the sandhills, fine, and freshly emerged. On the heaths were lots of *Argynnis selene*, *A. euphrosyne*, and *Cænonympha pamphilus*. Of the latter butterfly a fine specimen of the variety *albescens* ("whitish yellow"—see Robson's List, page 4) fell to the net of Mr. Blagg. The other form mentioned by Mr. Robson (*lyllus*—"dark borders to all wings") we have, commonly enough, at Delamere. *Hesperia sylvanus*, in plenty, closes my butterfly list.

Amongst the moths we frequently came across *Ennychia cingulata (cingulalis)* flitting over the short grass between the sandhills. By marshy edges were both of the "china-marks," *Hydrocampa nympheata* and *H. stagnata (stagnalis)*. Larvæ of *Z. filipendulæ* were spinning up on stones and grass-stems, and the cocoons I found were brought home, in case they should turn

out to be *Z. trifolii*, which I have had sent me from Abersoch. These cocoons, however, all turned out *Z. filipendulæ*. On the heaths *Pseudoterpna pruinata* (cytisaria) and *Eubolia palumbaria* were abundant, especially the latter, and now and then a worn *Nemeophila russula* would start up. *Tanagra atrata* (chærophyllata) concluded the list of dayfliers. This little black geometer was in splendid condition.

On one evening only did we try sugar. Mr. Kerr and Mr. Blagg went to try the sweets on a line of posts among the sandhills, whilst I was told off to watch some honeysuckle, a mile or more away along the coast, where we had seen *Chærocampa porcellus*. I took charge of my post before dusk, and, like a careful officer in command of a detachment, at once made such observations as would enable me to retire on the main body after dark. In doing so I noticed lots of moths flying about the cliffs and sandhills, which I put down as *Leucania littoralis*. There was a strong breeze from the sea on the heated land, which blew the honeysuckle about, so that I saw no *C. porcellus*. I netted a few common moths, the only species worth quoting being *Boarmia repandata*, since the form here is quite as strongly marked as the figure in Newman's 'British Moths,' page 63. With nothing to disturb the quiet but the moan from the sea, I took the way to my companions, whose lamp at length shone cheerily between the sandhills. I was accompanied by a pair of enormous owls, which flapped close overhead against the darkened sky. The luck at sugar turned out good—plenty of *L. littoralis*, *Mamestra albicollis*, with commoner insects.

What struck me most on the heaths, by day, was the large quantity of grasshoppers. There were grasshoppers red, grasshoppers green, and grasshoppers mottled and grey. One of wainscot colour was ornamented with a white dorsal stripe, strongly suggesting the colours of *L. littoralis*.

Not only would the student in Orthoptera find plenty of interest at Abersoch, but the lover of Neuroptera could hardly be less fortunate. Hovering over pools we took the dragon-fly, (*Platetrum depressum*), an addition to my list for the Chester district. The male of this large species has a lavender-blue body which, with the rich brown of the head and thorax, gives it a very showy appearance when on the wing. The female looks uniformly brown. The sexes are equal in size, and both have broad and flattened bodies. The only other *Odonata* worth mentioning—and it may be remarked we were not searching for them, but only fell in with them by chance—were *Sympetrum vulgatum*, and what I took to be *Brachytron pratense*, hovering over a wide ditch. Beetles were also common on the wing by day, over the heaths. There were *Phyllopertha horticola*, with its green thorax; *Necrophorus mortuorum*, the yellow-banded burying-beetle; *Aphodius fimetarius*, with red wing-covers; and



the little cockchafer, *Rhizotrogus solstitialis*, a perfect pest, as it resembled the burnets so much in its flight.

We bade Mr. Blagg good-bye on the 12th, in the early morning, and again seated ourselves in our Welsh car for Pwllheli. Away we went, between hedges gay with wild roses, pink and red, and here and there through clouds of honeysuckle scent. At Mynfford Junction we took the narrow-gauge mountain railway for Tan-y-Bwlch. The first experience is not pleasant, as you keep wondering if you have any footing at all on *terra firma*, or whether the train is not a flying-machine; but you soon get accustomed to it. At Tan-y-Bwlch I parted with Mr. Kerr and then went home, after a short halt at Blaenau Festiniog. My boxes contained a nice series of *Z. minos*, and all curiosity had been satisfied by an examination of the insect's haunts and habits.

Chester, August 3rd, 1893.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 246).

### *CALLIODES*, Guen.

THIS genus was founded for the reception of two species, an African and an Australian; principally on the character of pectinated antennæ. Guenée also mentions that one of them has the third palpal joint very short, and the other has a mere rudiment of that joint. Unfortunately there are other species closely related to his *C. apollina*, but with rather longer third joints to the palpi. All the Australian species differ from the African in having the button-like third joint, and all of them have a rounded ocellus on the primaries, instead of the spiral caudate ocellus of true *Calliodes*. I would, therefore, propose the name *Eucyclomma* for the Australian forms.

### *Calliodes pyrula*.

*Spirama pyrula*, Hopffer in Peters' Reise n. Mossambique, pl. xxviii. figs. 10, 11 (1862).

*S. lucida*, Felder, Reise der Nov. Lep. iv. pl. cxiii. fig. 8.

Tette and Natal.

I cannot conceive the reason for renaming this species. Hopffer's figure is evidently taken from a broken and faded example, and Felder's from a fresh specimen; otherwise there is nothing of any importance by which to distinguish them. This species and another (which we have received from Delagoa Bay) undoubtedly belong to *Calliodes*, not to *Spirama*.



*Eucyclomma castalia.*

*Bombyx castalia*, Fabricius, Ent. Syst. iii. p. 416, n. 31 (1793).

*Calliodes saturator*, Walker, Lep. Het. xiv. p. 1318, n. 3 (1857).

Moreton Bay, &c. Types in Coll. B. M.

Without examining the type in the Banksian collection, it would not have been possible to decide that the above were synonymous.

*SPIRAMA, Guen.**Spirama retorta.*

*Phalæna retorta*, Linneus, Mus. Lud. Ulr. ii. p. 376.

*Spiramia* (sic) *cohærens*, Walker, Lep. Het. xiv. p. 1321, n. 6.

India, Ceylon, Java, Burma, Japan. In Coll. B. M.

The supposed female of my *S. simplicior* belongs also to this species; the true *S. simplicior*, ♀, is much nearer to that sex of *S. japonica*.

*Spirama simplicior.*

*Spirama simplicior*, Butler, Trans. Ent. Soc. 1881, p. 198, n. 87.

*S. confusa*, Butler, Ill. Typ. Lep. Het. vii. p. 78, pl. cxxxii. figs. 6-8 (1889).

India and Japan. In Coll. B. M.

The type, ♂, of *S. simplicior*, from Japan, is rather smaller than those of *S. confusa* from India; but we have Indian examples of the latter which appear to differ in no constant characters from the former. The type of *S. simplicior*, ♀, as already noted, was that sex of *S. retorta*.

*Spirama jinchuena.*

*Spirama jinchuena*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 115, n. 28 (1883).

*S. inæqualis*, Butler, l. c., p. 116, n. 29 (1883).

Corea and Chekiang. Types in Coll. B. M.

*Spirama triloba.*

*Spirama triloba*, Guenée, Noct. iii. p. 197, n. 1595 (1852).

Silhet, Dharmasala, and Nilgiris. In Coll. B. M.

In spite of differences of pattern on both surfaces, I now believe that my *S. rosacea*, from Dharmasala, must be an aberrant form of this species. It is also probable, from the fact that Guenée's type of *S. triloba* was from Java, that his *S. mollis* (also a female, the type of which we possess), from the same locality, is a further development of the same species.

(To be continued.)

## NOTES AND OBSERVATIONS.

*COLIAS EDUSA* AND *C. HYALE* IN ENGLAND. — Several records of the occurrence of these species during the season have been received, but as others will probably be sent in later it seems advisable to defer publication until November, when the details will be presented in a convenient form.

*CHRYSOPHANUS (POLYOMMATUS) PHLÆAS*. — This species appears to have been rather commoner this year than usual in several Metropolitan localities. I observed it in scores during August between Northwood and Rickmansworth, and also towards Harefield. In other years I have never noticed more than about half-a-dozen specimens in either of these places. Mr. Jenner Weir informs me that at Beckenham, in Kent, he has seen more specimens of *C. phlæas* in his garden this autumn than during the ten preceding years that he has lived there. The species seems also to have been inclined to wander away from its breeding-ground. Mr. R. W. Thompson tells me that he took a specimen early in September in his garden near here; and in a communication received from Mr. Alfred Sich, that gentleman mentions seeing a specimen fluttering against a shop-window in St. James Street, near the Piccadilly end. — RICHARD SOUTH.

*VARIATION OF CHRYSOPHANUS (POLYOMMATUS) PHLÆAS*. — During the past few weeks *C. phlæas* has been remarkably abundant in this neighbourhood, and from what I learn it has been unusually numerous in various districts this autumn. On the 5th and 6th of September they were flying in profusion over a small extent of ground, which gave me a good opportunity of examining some hundreds for the purpose of selecting any well-marked or abnormal forms, with the result that I obtained a small but very variable series. The specimens range in expanse from  $\frac{7}{8}$  in. to  $1\frac{2}{3}$  in., thus differing in size rather more than half an inch. The copper colouring of all the specimens is very brilliant, varying from bright golden-copper to deeper fiery-copper; and two approach the var *schmidtii*, one having the left primary pale silvery-gold shading into copper at the base, the other has the right primary silvery-white. The size of the spots in different specimens vary from small dots to bold blotches. Two examples are exceptionally fine aberrations, having the copper bands of the secondaries replaced by a black band formed by the enlargement of the submarginal velvety-black spots, and the ground colour of these wings is lustrous steel-grey; in one a few of the nervures show coppery scales, the other has only the merest trace of copper on one or two nervures; both are females. In the other specimens the coppery band varies in width; in one the copper is extended along the nervures, and the rest of the wing is sprinkled with copper scales. The blue spots which sometimes occur on the secondaries are in one of the specimens under consideration conspicuously shown, and are five in number on each wing; these spots are also present, but less apparent, in two other examples. The above notes are, to a great extent, adverse to Mr. Merrifield's views on the effects of temperature on the colouring of *C. phlæas* (Trans. Ent. Soc. 1893, Pt. 1, p. 62). I quite expected to find the majority of specimens with the copper colouring dull and the black markings pale, corresponding with Mr. Merrifield's high temperature forms; but I found it exactly the reverse, as all those I examined were of brilliant colouring, the copper being rich and bright and the black deep; in most cases they closely resembled his low temperature forms.

Therefore, considering the vast numbers I saw on the same piece of ground at the same time, all having evidently been bred close by, they must necessarily have all been subjected to high temperatures during their various stages, and especially while in the pupa, as the temperature both day and night remained so high for weeks previous to, and at the time of, emergence; many were in rich condition, having evidently only just emerged. How many broods there have been this season it is impossible for me to say, as I have seen the species on the wing continually for the last six months. I have now a great number of larvæ feeding from eggs laid in the middle of August, and others just hatched from eggs deposited this month.—F. W. FROHAWK; Balham, S.W., September, 1893.

VARIETIES OF CHRYSOPHANUS (POLYOMMATUS) PHLÆAS IN KENT.—On the 7th Sept. my son captured a freshly-emerged specimen of a beautiful variety on the railway embankment near Dartford. It is of a pale straw colour, and intermediate between the type and var. *schmidtii*. I may add that *C. phlæas* has been extraordinarily abundant here lately, and we have paid considerable attention to the species, thereby obtaining several other very nice varieties, including one or two of a "streaked" form (under side), approaching somewhat to that obtaining occasionally amongst the *Lycænæ*, and which I have never before met with, although for years I have closely observed this species on every possible occasion.—E. SABINE; Erith.

PALLID VARIETY OF VANESSA URTICÆ.—On the 2nd ult. I captured, at Henlys Wood, near Newport, a specimen of *V. urticæ* in which the prevailing colour on the upper sides of the wings, instead of the usual reddish brown, is whitish buff, which colour also takes the place of the usual yellow spots on the costa and inner margin of the fore wings. The usual black markings and the white spots near the tips of the fore wings are present, but slightly smaller than in typical specimens. The under side is normal.—WILLIAM E. COX; 25, Caeran Road, Newport, Monmouthshire, Aug. 25.

[We have seen the very interesting aberration which our correspondent accurately describes above. The only traces of the typical fulvous or reddish brown colour are seen towards base and below third costal black spot of fore wing, and on the band of hind wing. Somewhat similar specimens of *V. urticæ* have been bred occasionally, but such aberrations are probably met with but rarely in the field.—ED.]

PACHETRA LEUCOPHÆA.—Reading Mr. Hanbury's article (Entom. 274) of this month reminds me that about thirty or thirty-five years ago I discovered this species in the Boxhill district, and in the course of seven or eight years managed to capture sixteen or eighteen specimens. It was always rare; a few I caught on the wing, flying round the privet flowers; the rest at sugar; but it was very skittish and did not take it freely, and I could not get it at light, which I supposed from its antennæ it would be attracted to. I tried to find it on trunks of trees, but never succeeded; but a few have been taken in this way by others in that neighbourhood. I know it occurs on the South Downs, and in the Rev. Mr. Burney's collection there is a nice series from there I believe. It seems to occur in the chalky districts, and generally on high ground; all my specimens were taken in June and July. On the Continent I believe it is found in May, and the specimens are larger and more strongly marked than any I have met with.—SAMUEL STEVENS; "Loanda," Beulah Hill, Norwood, Sept. 4.

A LOCALITY FOR PACHETRA LEUCOPHÆA.—I have taken this species for twenty-five years; some years only very few, others more plentifully.



On one occasion I captured twenty-three specimens in a single night. The locality is the "Devil's Kneading Trough," Brook, about a mile and a half from Wye Station, S.E. Railway. It is a very fine locality for several other species as well as *P. leucophæa*. There are two very high banks, the further and highest bank being the best. The following is the mode of capture:—Get sticks about 18 inches long; insert them in the bank, about 10 yards apart, in rows; then tie up bundles of grass, and put them on the heads of the sticks and daub them with sugar, which must be very thick or it soaks into the grass. In ordinary years the time should be the last week in May and first week in June, when a warm balmy night, without wind, should be sure to yield a dozen or more specimens of *P. leucophæa*. The species occurs all along the Wye Downs, but the "Devil's Kneading Trough" is its chief breeding-place. I shall be pleased to give every information to anyone wishing to go after this species.—G. PARRY; Church Street, St. Paul's, Canterbury, Sept. 13, 1893.

*SPILOSOMA LUBRICIPEDA* var. *ZATIMA* (= *RADIATA*).—I have just read Mr. South's paper, under the above heading (Entom. 257), with great interest; on my own account, because it gives me a favourable opportunity to modify the remarks I made on this variety in the 'Naturalist' for 1889, as quoted by Mr. South, and which—ever since I first saw, several months ago, the extreme form of *radiata* now being bred—I felt it would be necessary to do. My remarks, as quoted by Mr. South, no doubt imply that the York specimens of *radiata* are exactly the same form as that which Mr. Harrison, of Barnsley, was two years ago so fortunate as to breed; but such is not the case. The fact is, that any specimen of *lubricipeda* strongly marked with radiate streaks was called by us variety *radiata*, and it was to such specimens I, and no doubt Mr. Carrington also (Entom. xxii., p. 207), alluded in the remarks referred to. Fig. 1, illustrating Mr. South's paper, represents what, until the breeding of Mr. Harrison's grand specimens, had been considered a fairly good specimen of *radiata*; but Mr. Harrison's specimens much more nearly approach Fig. 2, and there seems little doubt that if the strain holds out, by selection, we shall in a year or two get this form (var. *deschangei*) absolutely. Mr. H. B. Fletcher, of Worthing, informs me that this extreme form of *radiata* was for very many years known to occur on the Lincolnshire coast, and that he has a fine but old specimen in his collection taken there. I believe it has occurred in Yorkshire; indeed, Mr. Hewett, of York, informs me that he has seen three specimens of the extreme form of *radiata*, which were taken at Driffeld. They are like Mr. Harrison's specimens, but smaller. It is certainly rare, whereas the form we have called *radiata*—the intermediate form—is of frequent occurrence in some districts. Through the kindness of Mr. Harrison, who last year sent me a small batch of eggs, I bred, from May 23rd to 31st last, fifty splendid specimens of *radiata*, and from eggs obtained from them have, during the past fortnight or so, bred nine more as second brood. To those who note the priority in emergence of the sexes, the following facts will be interesting, and probably puzzling. Of the first twenty-two specimens which emerged in May, only two were females, some dozen males emerging before a female appeared, whereas the latter half of the brood emerged nearly all females. In the second brood all the nine specimens which have emerged up to now are females, not a single male having put in an appearance.—GEO. T. PORRITT; Huddersfield, Sept. 1, 1893.

**SPILOSOMA MENDICA AND ITS VAR. RUSTICA.**—At the present time, when the local forms of the various species of the genus *Spilosoma* are attracting some amount of attention, it may be interesting to mention the pairing of individuals of these two very distinct forms. In the year 1886 I received ova of the Irish form (var. *rustica*, Hub.), at that time thought by some to be a distinct species, and, wishing to note any possible differences in the larvæ of the two forms, I also obtained ova of the typical English form,—veritable cockneys from the north of London,—and fed the larvæ resulting from the two under as nearly as possible similar circumstances. So far as I could detect there was no material difference between them. In May, 1887, the moths from the English ova began to appear, and I was at once desirous of obtaining a pairing between them and the Irish form; but in this I was not successful, owing to the former being all out before the latter began to emerge. In 1888 I was equally unsuccessful, for the same reason, and unfortunately my broods were becoming sickly, and the moths that came out in the following year were few in number and small in size. In point of time and emergence they were, however, nearer than they had previously been, which admitted of a freshly-emerged English female being paired with an almost white, but miserably undersized, Irish male. The pairing took place readily, but only four eggs were deposited; these all hatched. One larva either died or was lost, and three went to pupa; and on the 18th of May, 1890, I had the satisfaction of rearing two fine males: in size they are fully up to average, and in colour are intermediate between the two forms.—ROBERT ADKIN; Lewisham, Sept., 1893.

**NYSSIA ZONARIA IN LANCASHIRE.**—Your correspondent's note (Entom. 200) on this species is, as regards the distribution of the insect, rather misleading. Even so far back as the year 1867 its known geographical range extended from the estuary of the River Conway, Rhyl, Prestatyn, Hoylake, Wallasey, to the Crosby sand-hills in Lancashire! Since then it has been taken freely at Ainsdale and Crossens, in the Southport district, and at Lytham. There are also records of its capture in Epping Forest; on the Antrim coast, and on Achill Island in the West of Ireland. I can refer Mr. Renshaw to notices in the 'Entomologist' volumes:—iii. 365, x. 216, xxi. 156, xii. 108, xvii. 60, and xxv. 145.—C. E. STOTT; Bolton-le-Moors.

**GNOPHRIA RUBRICOLLIS.**—In reference to the note of your correspondent, Mr. Carr, concerning *G. rubricollis* (Entom. 276), I may state that I also took four of the above-named insect, one being a cripple, on the 24th of May in the present year, between Dolgelly and Arthog, in North Wales; and that I have never taken it in August, though I have often been there during that month.—S. RENSHAW; Ash House, Stretford, Manchester, Sept. 9, 1893.

**CERASTIS ERYTHROCEPHALA.**—This species, which was first taken in England I believe by Mr. Henry Cooke, who resided at Brighton some thirty or thirty-five years ago, and exhibited at the Entomological Society of London at the time, I think is not so rare if collectors would only search for it at the *proper time* and in its localities. I have a fine series, which I have obtained from time to time, taken under the South Downs between Brighton and Eastbourne, and again inland between Dover and Canterbury. Mr. Hammond, who used to reside midway between the latter places, informed me that he had taken several in his own garden, on ivy, towards the



end of October and early in November, and they were sold in his collection by auction about twenty-eight years ago. I see in Mr. Burney's collection there are several specimens, mostly, I think, obtained from the latter neighbourhood. — SAMUEL STEVENS; "Loanda," Beulah Hill, Norwood, Sept. 4, 1893.

*NEMEOPHILA PLANTAGINIS*, SECOND BROOD. — On May 22nd I found this moth in great profusion, but nearly all were males. From three females twenty-five eggs were obtained on May 26th, which hatched on the 31st. The young larvæ were of a pale sage-green colour, covered with long hairs. They took readily to lettuce, upon which they rapidly fed up. After the first change of skin, on June 8th, the colour changed to brown, finally becoming black, the ferruginous tufts of hair not appearing until after the second cast of skin, on June 17th. The third skin was cast on June 27th, fourth on July 10th, and fifth on July 16th. Three of the larvæ spun up on July 31st, the imagos (females) appearing Aug. 23rd. The remainder of the larvæ are still in various stages of growth. On Aug. 21st I took a freshly-emerged male, and also found two larvæ half grown. Eggs were also obtained from a female captured on this date, which have since hatched, the young larvæ taking to the lettuce as before. — EDGAR W. LIFTON; Gloster.

*PHALERA (PYGÆRA) BUCEPHALA* FEEDING ON *TROPEOLUM*. — Last month (August) I found in the garden a small brood of *P. bucephala*, in their third age, feeding on a plant of the common garden nasturtium (*Tropæolum lobbianum*), which was growing out of a window-box. I very promptly transferred them to a willow tree, as they were defoliating the nasturtium; but on looking on the willow next morning they were gone—perhaps ascended the tree. I have in other years taken them a mile further out from home, which is about two miles only from the centre of Manchester, but never so near the centre before. Neither have I heard of them feeding on nasturtium, having taken them on willow and lime (Gatley), sycamore (Withington), and oak (Alexandra Park, Charlton, Withington, and Didsbury). — JOHN WATSON; 177, Moss Lane East, Madchester.

THE BUTTERFLIES OF CORSICA. — Having spent five seasons at Ajaccio, and having read Mr. Standen's notes on the butterflies of Corsica (Entom. 236), I feel induced to make some remarks on them in connection with my experience there. Mr. Standen states that the families of *Parnassius*, *Melangaria*, *Erebia*, *Hesperia*, and *Thais* are not represented in that island. I have with me at this moment only a few notes of my captures there in 1892 and '93; but I have caught numerous specimens of *Erebia*, *Hesperia*, *Parnassius*, and one specimen of *Thais*, round about Ajaccio and Cauro. Mr. W. F. Kirby, in his 'Manual of European Butterflies,' names *Doritis apollinus*, *Thais cerisyi*, *Syrichthus therapne*, *Hesperia nostrodomus*, *Erebia melas*, *Cænonympha corinna*, &c.; L. Fiquier, in his 'Insect World,' speaks of *Parnassius mnemosyne*, *Thais cerisyi*; and Lang, in his 'Rhopalocera Europæ,' gives *Erebia manto*, *Melanargia ines*, *Thais rumina*, *T. polyxena*, &c., as being found in Corsica. A Corsican friend who had been out with me in previous years began to collect last year, and gave me, on my arrival in January last, some specimens of *Erebia*, among which I detected a few battered specimens of *E. melas*. I have found two specimens of *E. melas*, but of these two I will not be certain; they may have been *E. evias*. I have caught this year a battered specimen of *Thais rumina*, but it was in



very bad condition. On Feb. 26th, 1892, I caught good specimens of *Spilothyrus alcea*; they were very plentiful along the banks of rivulets. A list of my captures of butterflies, and dates of their first appearances last year, gives the following:—*Insularis* (var.), Feb. 26th. *Spilothyrus alcea*, Feb. 26th. *Pieris brassicae*, March 11th. *P. podalirius*, *Thecla rubi*, *Libythea celtis*, *Zegris eupheme*, April 4th. *Pieris chloridice*, March 3rd. *P. machaon*, April 7th. *Leucophasia sinapis*, April 6th. *Euchloë cardamines*, May 3rd. *Thais rumina*, May 4th. *Limenitis camilla*, May 6th. *Euchloë tagis*, *E. belemia*, May 8th. *Lycæna bellargus*, April 20th. *Hesperia nostrodamus*, May 7th. *Parnassius apollo*, May 22nd. Of the following I kept no date of their capture:—*Colias edusa* and var. *helice*, *C. hyale*, *Gonepteryx rhamni*, *G. cleopatra*, *Polyommatus phlœas*, *Lycæna bœtica*, *L. ægon*, *L. argus*, *L. orion*, *L. astrarche*, *L. argiolus*, *Vanessa egea*, *V. c-album*, *V. urticae* var. *ichnusa*, *V. polychloros*, *V. io*, *V. atalanta*, *V. cardui*, *Parage egeria* var. *egerides*, *Syrichthus alveus*. I think I have over eighty different sorts of butterflies captured in Corsica, and I believe that is a larger number than is to be found in Great Britain.—GEORGE H. COLEBY; Diekirch, Luxemburg, Sept. 10, 1893.

NOTE ON ZONOSOMA PUNCTARIA.—Last year I obtained about a hundred ova from females of first brood; most of the larvæ pupated about mid-summer, but about twelve fed very slowly, and pupated at the time when the others were appearing in the perfect state; these remained in the pupa state throughout the winter, and emerged with the usual spring brood. Among these pupæ there were both the green and brown varieties.—P. T. LATHY; Bexley Heath, Sept. 20, 1893.

GREASY LEPIDOPTERA.—I have been for some time past experimenting with ether for the extraction of grease. This fluid, so far as I am aware, has not hitherto been employed by entomologists for this particular purpose, though its properties as a solvent of fats and oils are well known to chemists; indeed in a modified form (acetic ether) it is this medium by means of which the epispastic principle of *Cantharis vesicatoria* is obtained. My object in writing this is to say that my work has come to a standstill for want of material, and to solicit the loan of *very, very* greasy specimens (saturated to the cilia if possible), for which I will cheerfully pay postage both ways.—H. G. KNAGGS; Camden Villa, Lennard Road, Folkestone.

SUGAR VERSUS HONEYDEW.—In connection with this question (Entom. 274) I experienced a curious instance of the failure of artificial sweets whilst "sugaring" on one of the Lancashire "mosses" last month. I had sugared a number of trees on the edge of the "moss," but not a single moth was attracted thereto. The rays of my lantern, however, happened to fall on a conspicuous object on the flower of a species of rank grass that grows on such places, and, pursuing my observations further over a larger area, there, sure enough, were the moths feeding—each hanging on to a single stalk and "guzzling" at the flower. But whether the flowers exuded sweets or there was honeydew on them, I did not examine. True the moths were only common things,—*Xanthia fulvago* (*cerago*), *Hydræcia micacea*, *H. nictitans*, *Phlogophora meticulosa*, &c.,—but the fact remains that they were on the grass and not on my sugar, although the latter was within a few yards. And my sugaring mixture, too, is usually most successful, and is admitted by my entomological friends to be particularly attractive.—GEO. O. DAY; Parr's Bank House, Knutsford, Sept. 6, 1893.

WASPS DESTRUCTIVE TO LARVÆ, &c.—I have heard a good deal of the harm done by wasps, but not a word on the other side. There can be no doubt, however, that they are very active scavengers, destroying aphides and larvæ in enormous quantities. The scarcity of larvæ in the New Forest this August was probably greatly due to their industry. The destruction of larvæ, of course, is to the entomologist by no means an unmixed blessing, though from a wider point of view it may be. For the destruction of nests, I have found by far the easiest and most effectual method to be a lump of cyanide of potassium dropped in the mouth of the hole.—F. C. WOODFORDE; Market Drayton, Salop, Sept. 23, 1893.

### CAPTURES AND FIELD REPORTS.

NOTES ON VANESSIDÆ, &c., IN THE COTSWOLDS.—With reference to Mr. J. Anderson's note (Entom. 276) I may state that, though *Vanessa cardui* was very plentiful in this district (about seven miles from Stroud) last year, and *Colias edusa* swarmed round Dursley, I have not seen a single specimen of either of these two species this season. *Plusia gamma*, too, has been very scarce; last Saturday I noticed two or three in very good condition, the first, I believe, that I have seen here this year. *Vanessa io*, *V. atalanta*, and *V. urtica*, on the other hand, have been plentiful enough; at the present time *V. atalanta* is particularly abundant in orchards, &c., feeding on fallen pears. I took *V. c-album* on Sept. 2nd. *Macroglossa stellatarum* has been noticed in considerable numbers round here of late. The August brood of *Lycæna bellargus* was fairly abundant here; this is, I believe, rather a local insect in Gloucestershire. I have not heard of any Cotswold captures of *L. arion* this year, nor have I found it myself.—R. W. FITZGERALD; Uley, Dursley, Gloucestershire, Sept. 12, 1893.

MACROGLOSSA STELLATARUM AT KILBURN.—On the 3rd inst. my uncle and myself were pleased to see a fine *M. stellatarum* hovering over the petunias in our garden, about 6.15 p.m.—GEORGE BERGMAN; 29, Priory Road, Kilburn, N.W., Sept. 5, 1893.

ARGYNNIS EUPHROSYNE LATE IN AUGUST.—On August 26th, at Bagley Wood, Berks, I took a small *A. euphrosyne* on the wing. It was a dark specimen with very light fringe, in splendid condition, and had evidently but shortly left the chrysalis. It appeared weak on the wing, but that may have been on account of the weather being somewhat unfavourable. I have recorded the capture as the insect is evidently a member of an abnormal second brood, though, I believe, it is not an unknown occurrence for a few individuals of this species to appear in the autumn.—W. J. LUCAS (B.A.); Juxon Street, Oxford, Aug. 31, 1893.

POLYOMMATUS BÆTICA NEAR DARTFORD.—While seeking for varieties of *P. phlœas* on the railway embankment near this town, on the 7th inst., my son noticed a butterfly (with its wings closed) which he did not recognise, settled on a flower. He accordingly at once netted and boxed it, and showed it to me (I was only a few yards distant at the time), when I was soon able to identify it as *P. bætica*. It is a male, and in very fair condition, but is considerably smaller than Newman figures them in his 'British Butterflies.' Doubtless, had the insect been on the wing, it would have been passed over as a worn common blue, a few of which are about, and we



have since given such every attention, but with, as yet, no further result as regards *P. bætica*.—E. SABINE; Sept. 9, 1893.

POLYOMMATUS BÆTICA IN SUSSEX.—I captured a specimen of this rare British butterfly on the 28th of August last, near Beckley, Sussex. It was flying in a rough meadow near hop-grounds.—HAROLD M. WARNER; 44, Highbury Park, N., Sept. 4, 1893.

NOTES ON THE SEASON FROM CARMARTHENSHIRE.—The Rhopalocera have generally been abundant this season, especially the "Whites," *Euchloë cardamines*, *Lycæna icarus*, and particularly *Polyommatus phlœas*, the latter being still so. From the exceptionally warm spring many appeared much earlier than usual; the second brood of *Lycæna icarus* was coming out on July 5th; *Argynnis aglaia* appeared on May 31st. Of the Heterocera the Geometræ were abundant, especially *Crocallis elinguaris*, *Cidaria russata*, *C. fulvata*, and *C. ribesaria*. The Noctuæ, on the other hand, with a few exceptions, have been scarce; some species usually seen I missed. The exceptions were *Xylophasia polyodon*, *X. lithoxylea*, and *Apamea didyma (oculea)*, the last being in endless variety. I noticed *Hadena suasa* on July 14th: would this be a retarded emergence from the long drought? Three broods appeared of *Rumia crataegata*—in April, June, and August. Many Tortrices were abundant. Several larvæ of *Acherontia atropos* have been found at Tenby.—T. B. JEFFERYS; Langharne, Carmarthenshire.

NOTES FROM NOTTINGHAMSHIRE.—On Sept. 1st I was fortunate enough to take a specimen of *Cirrhædia æerampelina* at light in my house, being the first time I have met with this species. *Heliphobus popularis* have been very common on the lamps, and among them I have taken three or four females. While "mothing" last week I was surprised to see a *Vanessa atalanta* settle on a gas-lamp, as I have never before known a butterfly to be attracted by light.—DOUGLAS H. PEARSON; Chilwell, Notts, Sept. 11, 1893.

CATOCALA FRAXINI IN TUNBRIDGE WELLS.—In August a friend of mine saw a splendid example of *C. fraxini* at rest on a tree in the Pantiles, Tunbridge Wells. He followed it into a shop, where it was eventually lost.—H. W. SHEPHEARD-WALWYN; Bidborough, Sept. 15, 1893.

ABNORMAL EXAMPLE OF VANESSA ATALANTA.—I bred from a larva found near Eastbourne a curious variety of *Vanessa atalanta*, having the upper half of the right lower wing fulvous-yellow, and the markings on the upper right wing paler than the other side. One imago emerged six days after pupation. It was kept in a cool cupboard, and could not have been affected by the great heat at that time. *Lycæna adonis* appeared fairly plentiful at Beechy Head, and I captured some exceedingly fine specimens; also *Lycæna corydon*; two good examples of *Aspilates citraria*, and one *Agrotis lunigera*.—H. W. SHEPHEARD-WALWYN; Bidborough, near Tunbridge Wells, Sept. 15, 1893.

SUGARING.—Among the forty-two species which have visited the sugared tree-trunks are the following:—*Drepana binaria*, *Hydræcia micacea*, *Dipterygia scabriuscula*, *Agrotis puta* and *A. suffusa*, *Noctua umbrosa* and *N. baia*, *Xanthia citrigo*, *Tethea subtusa*, and *Macaria liturata*. The last is probably only a visitor in the district, like the specimen taken by Mr. Bird



at Hammersmith (Entom. 277). It would be interesting to know if *M. liturata* has this year been more than usually abundant in the pine woods of Surrey and Berkshire. *Drepana binaria* seems an unusual species at sugar; but sugar was evidently the attraction, as the moth was taken on a walnut tree, not on an oak.—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, Sept. 7, 1893.

AUGUST COLLECTING IN DORSETSHIRE.—During the last two weeks of August my brother and I entomologised in the neighbourhood of Lyme Regis (Dorset) with considerable success. I notice (Entom. 280) that certain members of the South London Entomological Society came to the conclusion that the present season, by reason of the unusual and prolonged heat, has not been favourable as a whole to insect life. As far as I myself am concerned, I have found the season a good one. At Oxshott, in Sherwood, in Norfolk, and at this place, with which the present communication is concerned, my record has been good. But to return to Lyme Regis. Just outside Lyme, in the direction of Charmouth, the land on the cliff side has slipped, and formed a broad slope covered with scrubby vegetation. This spot proved a most prolific hunting-ground. *Colias edusa* literally swarmed; they were in fine condition, and appeared in greater numbers than any other insect. Var. *helice* I have failed to discover here, and I have not seen *C. hyale*; but *C. edusa* is indubitably common, appearing, in addition to the locality mentioned, in the garden, and in the street of the village. It was amusing to watch the dead set made by other butterflies against these beautiful creatures. *Lycæna icarus* and *Polyommatus phlæas*, which were both extremely common, were especially intolerant, chasing their more gorgeous brethren about, and worrying them off the flowers. I also took in considerable numbers specimens of *Hesperia tages* in really good condition. Newman only gives May as the month for their appearance; but they were certainly plentiful here at the end of August. *Epinephle janira*, *Pararge megæra*, *Pieris napi*, *Epinephle tithonus*, and *Cænonympha pamphilus* added quantity, if not quality, to the company. I also observed *Satyrus semele*, but it was not common. In the lanes *Pararge ægeria*, *P. megæra*, and *Epinephle hyperanthus* were represented in great numbers. In the garden the geranium beds were visited largely by *Macroglossa stellatarum*. They were in excellent condition, and I have never before seen them in such great numbers. I mention this because I see a note to the same effect (Entom. 254) from a correspondent at Barmouth. Two insects have been conspicuous by their absence—*Vanessa io* and *Pieris brassicæ*. We have seen none of the former, and only one of the latter species. *V. atalanta* appeared in great numbers; I counted seven specimens in as many yards; and specimens of *V. urticæ*, like the wasps this year, were not so rare as to be diligently sought after. Of moths I cannot tell much, as circumstances prevented me from working by night. My brother, however, took a larva, nearly full-grown, of *Pygæra bucephala* off the nut-bushes, and also captured two specimens of *Bombyx quercus*, which supplied him with twenty eggs; these are now hatched out, and the larvæ are feeding well on rose-leaves. On the night of Sept. 6th our dinner-table was visited by two good specimens of *Heliophobus popularis*, which received what must have seemed to them an unnecessarily warm reception. My entomological excursions have perforce been few and far between; but I should imagine from the little I have done that Lyme Regis, and the country round it, was as profitable to entomologists as it is beautiful to the

less lucky individual who entomologises not.—ERNEST B. CHARLES: Shelley House, Chelsea Embankment, London, S.W.

PIERIS DAPLIDICE IN JERSEY.—It is with much pleasure that I record the capture of *P. daplidice* in Jersey. The specimen taken was a male, and was in perfect condition. It was caught on Monday, August 21st, at about eleven o'clock in the morning, on Gronville Common.—STANLEY GUITON; 31, Bath Street, Jersey, Sept. 19, 1893.

CAPTURES IN THE LAKE DISTRICT.—While staying at Grasmere, this year, I noticed that butterflies were scarce, but moths fairly abundant. Of the latter the following is a list:—*Epione apiciaria* (I saw one), *Crocallis elinguaris*, *Gnophos obscurata*, *Larentia olivata* (two, and saw some more), *Eupithecia sobrinata*, *Melanippe subtristata* (swarmed in pine woods), *Coremia propugnata*, *Cidaria russata* (all three varieties), *C. ribesaria*, *Cymatophora diluta* (two), *Hydræcia nictitans*, *Xylophasia polyodon*, *Heliphobus popularis*, *Charæas graminis* (swarmed everywhere), *Tryphæna ianthina* and *T. fimbria*, *Noctua glareosa*, *N. depuncta* (one, battered), *N. xanthographa*, *Xanthia citrigo* (five), *X. cerago* (two) *Cirrhædia xerampelina* (one), *Cosmia trapezina*, *Polia chi* (about forty, to be found everywhere on walls), *Phlogophora meticulosa*, *Hadena protea*, *Gonoptera libatrix*, *Mania maura* (eleven), *Stilbia anomala* (one, and saw others), and *Amphipyra tragopogonis*. These were taken in August, and I think searching walls and trees then very productive, especially of *Xanthas*, *Polia chi*, and *Geometers*, such as *Coremia propugnata*.—S. RENSHAW; Ash House, Stretford, Manchester, Sept. 19.

UROPTERYX SAMBUCARIA IN SEPTEMBER.—In the fourth week of August I found a larva of *U. sambucaria* in a cocoon; it pupated in two or three days, and emerged on the 17th of September. I may add that the larvæ of this moth which I have seen were very large for this time of the year.—J. F. BIRD; Rosedale, 162, Dalling Road, Hammersmith, W., Sept. 19.

VANESSA C-ALBUM IN NOTTS.—On Sept. 15th my brother captured a specimen of *Vanessa c-album* in our orchard. Newman mentions this species as formerly taken in Nottinghamshire, near Mansfield, and also at Warsop, Ollerton, and Newark; but during the seventeen years in which we have been collecting, we have never before observed a specimen in this neighbourhood.—E. MAUDE ALDERSON; Worksop, Notts.

LEUCANIA VITELLINA.—During the last few weeks I have been so fortunate as to obtain three specimens of the above rare insect. The first was caught at sugar on August 24th, by Mrs. Hanbury, in the enclosure by Brockenhurst Bridge. The second and third were taken by myself, at Freshwater, on the 7th and 11th of September. All three specimens are in exceptionally fine condition; that captured on the 11th is in the possession of Mr. A. J. Hodges, who was collecting with me at the time I took it.—FREDERICK J. HANBURY; 37, Lombard Street, London, E.C.

SIREX GIGAS IN NOTTS.—Towards the end of August I had brought to me a fine specimen of *Sirex gigas*, which had been caught in a shop in the town. The specimen is a large one, measuring nearly  $2\frac{3}{4}$  in. from tip to tip of the wings.—E. MAUDE ALDERSON; Worksop, Notts.

ERRATA.—P. 252, line 16 from top, for *Pieris napi* read *Pieris rapæ*. P. 276, line 23, for "Cheadle" read "Montgomeryshire."



## SOCIETIES.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*Sept. 14th, 1893.*—J. Jenner Weir, F.L.S., President, in the chair. Mr. Auld exhibited living larvæ of *Phorodesma smaragdaria*, Fb.; also two breeding-cages for larvæ, as described by Mr. H. G. Knaggs in the 'Entomologist's Monthly Magazine' for July last. Mr. South showed a fine series of *Spilosoma lubricipeda* var. *zatima*, Cr., and modifications of that form from Heligoland; a splendid var. of *Argynnis euphrosyne*, L., taken in Lancashire by Mr. T. Baynes; a pale var. of *Vanessa urticæ*, L., from Monmouthshire, captured by Mr. W. E. Cox; a blue specimen of *Procris statites*, L.; and a number of *Zygæna trifolii*, Esp., including almost all the known forms. Mr. Tutt mentioned that out of about two hundred specimens of this insect taken in North Kent last year, five only were absolutely typical, the remainder having a tendency to assume a six-spotted form, these in most cases being well-marked and similar to *Z. filipendulæ*, L. Mr. Weir was of opinion that these two species do occasionally cross in a state of nature. Mr. Fenn exhibited a long series of *Spilosoma lubricipeda* var. *radiata*, St., bred from ova received from Mr. Tugwell; *Gnophos obscurata*, Hb., from Folkestone; and *Macaria notata*, L., bred from ova. Mr. Fenn also exhibited *Selenia lunaria*, Schiff., and read a note thereon. Mr. R. Adkin exhibited a series of *Thecla betulæ*, L., and read a note with reference to the order of sexual emergence. He also showed a short series of *Pygæra pigra*, Hufn. (*reclusa*, Fb.), bred from larvæ taken in Sutherlandshire last autumn. Mr. Jenner Weir read a note in which he stated that in a recent tour in Belgium he had seen no *Colias hyalæ*, L., and but one *C. edusa*, Fb. He also stated how exceedingly abundant the third brood of *Polyommatus phlæas*, L., had been in his garden, at Beckenham, this September. Mr. Tutt gave his experience of a day amongst the Lepidoptera in the suburbs of Paris, at the beginning of August, when *C. hyalæ*, L., was in numbers, with *Agrophila sulphuralis*, L., *Acontia luctuosa*, Esp., &c., and many other species in great numbers. Mr. Enock exhibited wheat-stems containing pupæ of the Hessian fly, from Sidmouth, where he found it infesting the wheat and barley; also examples of *Chlorops taniopus*, the destructive ribbon-footed corn-fly, and made some interesting remarks on both species.—H. WILLIAMS, *Hon. Sec.*

**LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.**—*Sept. 11th.*—Mr. W. E. Sharp, Vice-President, in the chair. Mr. G. Morel-Deville read a paper entitled "A Fortnight's Entomology in the Canary Islands," in which he described the difficulties of collecting specimens in Canary, owing to the intense heat, the large cactus, and the laval nature of the ground. He then recounted the species taken, the majority of which occurred in Great Britain, and gave a graphic description of the capital and general features of the country. The paper was illustrated by numerous photos and specimens. The chairman exhibited a number of Coleoptera from Worcester and Delamere. Mr. Harker, Lepidoptera from Missouri and Kentucky, Mr. Watson, the female of *Papilio phorcas*, which he stated was apparently very rare, although the male was commonly received from Africa. Mr. Newstead, nests or cells of *Crabro crysostoma* and *Pemphredon lugubris*, the former stored with a species of *Syrphus*, and the latter with an aphid (*Melananoxanthus salicis*, Linn.) common on willow, to be used as food; and *Cassida viridis*, taken on new land formed by the Manchester Ship Canal at Ince, Cheshire.—F. N. PIERCE, *Hon. Sec.*



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## VARIATION OF *CHRYSOPHANUS PHLÆAS* IN BRITAIN.



FIG. 1.



FIG. 2.

ALTHOUGH this species is subject to considerable variation within certain limits, the capture of strikingly aberrant specimens is a comparative rare occurrence. Mr. Frohawk, of Balham, and Mr. Sabine, of Erith, have detected, among the numerous specimens of *C. phlæas* occurring in their respective districts this year, some very interesting varieties. None of these examples exhibit anything absolutely novel in the way of aberration above, but the markings on the under surface of the specimens figured (taken by Mr. Sabine) are curiously abnormal.

*C. phlæas*, in Europe, ranges in colour from the typical copper towards the dark smoky suffused form, known as var. *eleus*, Fabr., on the one hand, and in the direction of the silvery white var. *schmidtii* on the other. Both these forms, together with various modifications of each, have occurred in Britain. The specimen recorded by Mr. Sabine (*ante*, p. 295) is an intermediate between the type and var. *schmidtii*. The fore wings are shining pale straw colour; the costa is broadly black along the apical half, and suffused with black along the basal half; the outer margin is also broadly black, and the spots are typical. Hind wings black; marginal band rather broader than usual, and of the same straw colour as fore wings; base of wings dusted with shining straw-coloured scales. Fringes greyish white. Under surface of fore wings pale straw, but quite typical in all other respects. Hind wings typical. Specimens sometimes occur with one fore wing only silvery

white, whilst the other wings are typical. In other specimens both fore wings are silvery white, and the hind wings quite normal. Another and not altogether rare form of colour-variation is that in which the hind wings alone are aberrant. In such specimens the copper-coloured band is either broken up into narrow streaks, or entirely obliterated by the encroachment of the ground colour.

The black spots on upper surface of the fore wings are sometimes very small, and not infrequently specimens are found with less than the normal number of spots, and in very rare instances the whole of the spots are obsolete. There is also aberration from typical lines in the opposite direction, and we find examples with the spots much larger than usual, and often tending to confluency. The extreme limit to this phase in the variation of *C. phlæas* appears to be reached in var. *fasciata*, the type of which was from Florida, and is described by Strecker as follows:—"♀. All the black spots on upper surface of primaries, save one within the discoidal cell, are enormously enlarged and confluent, forming a broad, somewhat irregular, black band, extending from costa to inner margin. Under surface exactly as in common form." ('Butterflies and Moths of N. America,' p. 101, 1878.) In the 'Entomologist' for 1878 (xi., p. 25) is a figure of a banded example of *C. phlæas*, captured in Middlesex, which is certainly of the form described by Strecker. Intermediates between var. *fasciata*, and the type are not rare in Britain, and Mr. Sabine captured three examples this year, in all of which the black spots are very large, and those of transverse series inclined to coalesce; the outer discal spot in one example is almost united with fourth spot of transverse series; in another specimen, the third and fifth spots of transverse series are pyriform. Blue spots before the copper band of hind wings are not unusual, but these are rarely, if ever, so large and conspicuous in British specimens as they are in examples from Eastern Asia. On the under surface the black spots on primaries are very frequently distinctly ringed with yellowish, but the spots on the hind wings are not well defined as a rule. In some examples, however, the black spots are not only distinct on the hind wings, but these wings have also a black transverse waved line, edged externally with pale greyish brown.

FIG. 1. ♂. Upper surface: the black spots on the fore wings of this example are rather large, and those of the transverse series are almost confluent. On the under surface, the markings are of a very irregular character.

FIG. 2. ♂. In this specimen aberration is confined to the under surface of hind wings; these have all the black spots well defined, including a large quadrate one about middle of the costa, and an elongate one on the abdominal margin towards anal angle.

RICHARD SOUTH.

## THE "MELANISM" CONTROVERSY.

BY W. F. DE VISMES KANE, M.A., F.E.S.

IN the August number of the 'British Naturalist' there appeared an article by Mr. W. E. Sharp, which seems to be very opportune, and calculated to arrest temporarily the tide of speculative theories by which the subject seems likely ere long to be obscured. His criticism deals chiefly with the essays published by Mr. Tutt, but applies equally to various contributions of other writers from time to time. Now, Mr. Tutt has done yeoman service in attracting more general attention to the scientific aspect of Entomology, and eliciting the opinions of many observers; but it seems full time that some weak points in the chains of argument by which various theories have been supported should be pointed out. Besides the objections urged by Mr. Sharp, namely, a confusion of ideas as to the biological problems involved, I am of opinion that a good deal of the speculative discussion is somewhat "previous" and premature, by reason of the premises being as yet insufficiently ascertained and enunciated; so that there is some danger of the question being prejudiced in at least some of its aspects. Mr. Sharp, who disclaims any special knowledge of the order of Lepidoptera, takes for granted, or at least does not specially challenge, the premises on the ground of definiteness and precision. Now, this is the point I desire to draw attention to. No doubt Mr. Tutt and many others have amassed large and interesting collections of varietal forms, and many valuable contributions to our knowledge have appeared in the 'Record' and elsewhere. Nevertheless the subject is so complex, when carefully examined, that it would seem to me most advisable to have the facts sifted and correlated much more carefully than has hitherto been done, so that we may know much more precisely the phenomena we have to analyse. Among the matters that should, *in limine*, be ascertained, I may instance the following. Are the Rhopalocera and Heterocera, whose life-habits are for the most part so distinct in the imago stage, affected similarly by similar environments? I have a strong conviction to the contrary, though writers on melanism seem usually to take for granted that they are. Then as to Geometridæ and Noctuidæ in smoky districts, it would be interesting (bearing in mind the larger area of wing surface exposed by the former when at rest, and habits of diurnal concealment of species of the latter) to know the numerical proportion of species of each affected by melanochoism. Again, certain species of Lepidoptera we know present archaic or congenital constant varieties, in districts widely separated geographically and differing greatly in climatal and physical characters. The vars. *lunenburgensis* and *sedii* of *E. lutulenta*, and



*zatima* of *S. lubricipeda*, seem to be cases in point. Let us eliminate such forms and put them into a group by themselves; with their known British and Continental distribution, if in any way they are restricted to locality. Carefully compiled lists of melanic variations, found in particular districts peculiar in their physical or other characters, would be of much avail also for students of the subject. That some more precise information is desirable appears to me probable, for I observe almost every writer, Mr. Sharp included, refers to the Irish lepidopterous fauna as being melanic or melanochoic in its general tendency. Mr. Tutt invariably attributes this character to the Sligo neighbourhood in particular, a district better represented perhaps in English cabinets than any other Irish one, through the industry of Mr. Russ. Nevertheless I find, by a recent correspondence with that gentleman, that he agrees with me, who have also collected largely there, in denying that the Sligo Macro-Lepidoptera present any predominant melanic facies. And as a result of a good many years of work in widespread localities in Ireland, I would venture to enter a caveat against any conclusion that the Irish fauna generally is so characterised. I hope to point out in the Irish Catalogue, now being published, the range of variation of each species so far as ascertained. Specialists will then be in a better position to institute juster comparisons between our island fauna and that of wider areas. Would it be too much to hope that Mr. Tutt, with his fine collection, extensive correspondence, and indefatigable industry, will sooner or later tabulate the facts we desire to discuss, and define a little more exactly the phenomena certainly ascertained? His "Variation of the Noctuæ" does not deal as fully as is desirable with the geographical distribution of the principal melanic varieties.

Mr. Sharp has pointed out that in the discussion of the subject, biological doctrines and terms have been somewhat loosely and confusedly invoked. As there are many entomological workers who have not studied the points at issue, I may be pardoned for stating concisely the chief conclusions at which zoologists have arrived with regard to the agencies at work. In reference to varieties the three primary agents supposed to evolve variations are:—1. The immediate action of the environment, *i.e.*, humidity, food, temperature, &c. 2. Constitutional or congenital tendencies. 3. Change of function, or the exercise or disuse of organs. In reference to species, the secondary factors operating to crystallise variations into species appear to be as follows:—If they are transmissible (for the heritable nature of the first and third classes of variations is denied by many of our most eminent authorities), (1) accumulation may perpetuate them as environmental and functional modifications of species respectively. With regard to the second class, or constitutional variations, since they are undoubtedly heritable, either (2)

natural selection, or (3) the continuance of the conditions which gave rise to them, may produce new species. (4) Isolation is another secondary factor operating upon all variations. Mr. A. J. Thomson defines the two principal schools of biological speculation as follows: "A minority hold that the modification of species takes place by cumulative growth, influenced by function and environment, and pruned by natural selection; but the majority hold that new species result from the action of natural selection on numerous, spontaneous, and indefinite variations." And he states as his opinion that "until we know much more about the primary factors which directly cause variations, it will not be possible to decide in regard to the precise scope of natural selection, and the other secondary factors which foster and accumulate, thin or prune; which in short establish a new organic equilibrium. The argument has been too much in regard to possibilities, too little in regard to observed facts of variation." If this be so in relation to zoology generally, it seems more particularly to apply to those who have dealt with the study of evolution among Lepidoptera, of course with the exception of a few entomologists like Mr. Poulton and others, who are most perseveringly experimenting as to the action of immediate environment on certain species. I therefore heartily endorse Mr. Sharp's strictures, taken in a general sense, on the drift of the "melanic" discussion, and agree with him that the best service entomologists can render to biological science lies in the careful investigation, by exact experiment, of the primary factors inducing variation. For as Weissmann and others deny the transmissibility of changes produced by food, temperature, &c., as well as those arising from functional causes, use and disuse, &c., we should in the first place attack this problem, rather than take it for granted, as it seems to me Mr. Tutt has done, and indeed most writers on the subject. For if Weissmann's opinions are generally adopted, and they are gaining much acceptance, theories based on the opposite belief will be discredited. And workers in this field would do well not to overlook the strongly-expressed opinion of Romanes, to the effect that isolation is the universal condition to the establishment of specific modification. Now, in the melanic or melanochroic variations said to be peculiar to smoke-discoloured districts, where the factor of isolation does not seem to be present, we apparently have to deal with a series of parallel variations of various species which are said to be superseding the type very rapidly. The question is whether this is effected by natural selection, or, as many have argued, by the immediate action of the environment. Before we can venture to form an opinion in the absence of proof by experimental results, we require reliable statistics as to the distribution of each of these varieties, as to its spread locally in each district, and a list of the



melanic varieties in those districts. The cases of *Amphidasys betularia* v. *doubledayaria* and *Hybernia progemmaria* v. *infuscata* have been frequently brought forward, but a more precise array of statistics on the subject is desirable.

Toward the close of Mr. Sharp's paper he refers to Lord Walsingham's suggestion that melanism would be advantageous to insects in cold and sunless climates, by securing increased absorption of heat rays. The theory appears very plausible, as Mr. Sharp admits, and based on more tangible grounds than some others. But there are some facts which should be considered when estimating its claims to acceptance. Though it is easy to conceive that in a former epoch, mountain regions and many countries in high latitudes, may have suffered from a defect of sunshine, producing conditions which Lord Walsingham's theory would apply to, yet this seems very far from being the case now, either in Iceland, Scandinavia, or the Central European Alps, where the summers are very hot and sunny compared with those of the British Islands; so that we should expect to find melanism, if of modern origin, chiefly notable in Ireland and Scotland, and in a less degree in the rest of Great Britain. And what is really the fact as to the distribution of dark varieties in Alpine and Arctic regions? We should bear in mind that the theory in question seems only applicable to Diurnal Lepidoptera. As this includes only a small proportion of the Heterocera, let us take the case of the Rhopalocera only. I do not know that any portion of these in the British Islands, are remarkable for melanochoic tendencies. And further, it will, I think, be found that in case of species of wide range, in most instances a northerly latitude produces a tendency to pallid coloration, a loss of metallic lustre in several genera, such as *Cænonympha*, *Argynnis*, and *Euchloë*: and an indefinite delineation:—phenomena indicating an inferior degree of vitality. Moreover, in the case of distinctively Northern or Alpine species, such as certain of the Pieridæ and Coliidæ, and the genera of *Parnassius* and *Æneis*, we do not find dark coloration to be the rule, excepting in the genus *Erebia*. Among the latter, however, we do not find any approximation to a gradation of tone, corresponding to the altitude or zone which they affect. Though one or two species which frequent the highest summits are extremely dark, those which are confined to the lowest region are only a shade lighter, paler species occurring in the intermediate zones. In the Pieridæ it is true that the var. *bryoniæ* of *P. napi* appears to be an instance in favour of Lord Walsingham's theory; but against this we have *P. callidice*, frequenting a much higher level, which shows no similar peculiarity. The Arctic and Alpine Coliidæ, both species and varieties, are paler than those of the warmer regions, with but a single exception as far as I know; and in the genera of *Argynnis* and *Melitæa* similar phenomena are



noticeable. *M. cynthia* has been cited as an instance of a high Alpine insect assuming darker tints than is usual, but it should be remembered that this is the attribute only of the male, and is accompanied by a whiter central series than is found in any of its congeners, while the female remains of an ordinary fulvous tint, with the black shadings very poorly developed; and as to the dwarf mountain form *merope* of *M. aurinia*, it is by no means of so dark coloration as some lowland forms, and has the fulvous patches very bleached. Nor in the genus *Cænonympha* can I find any support to the theory, the bleached colour and obsolete markings of the northern form of *C. typhon* being a very striking instance of what I conceive to be the rule in species which have a northerly range. The exclusively Northern and Alpine genera, such as *Parnassius* and *Eneis*, are no darker than the Southern Pieridæ and Satyridæ. But I cannot here discuss the problems at any length, but may venture to suggest an opinion that we ought to study these phenomena from a narrower basis, and give more prominence to the effects of congenital tendencies. Some genera appear to tend to vary in one direction, some in another; and if we could have before us the archaic types of *Pieris* and *Melanargia*, it seems to me possible that we should find the pure white of the former was its most recent development, and the deep black of the latter, in South European forms, similarly a late acquisition; so that an Arctic climate would produce a reversion to a dingier type of *Pieris*; and a southern latitude give rise to the black forms *procida* and *turcica* of *Melanargia galatea*.

Just a few words, in conclusion, with regard to the Noctuæ. There can be no doubt that moisture and shade are most conducive to the welfare of the larval stage of many Noctuæ, while dry and sunny conditions bring others to the highest state of perfection. It is not therefore likely that the same causes would bring about the same results in every case, and it is therefore probable that generalisations based on external phenomena alone, unaccompanied by research into the racial characters of the particular genus or species, will only lead to confusion.

Drumreask House, Monaghan.

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## ON CERTAIN SPECIES OF NORTH AMERICAN HYPENIDÆ.

By A. G. BUTLER, Ph.D., &c.

PROFESSOR JOHN B. SMITH, in his extremely useful 'Catalogue of Noctuidæ,' just published, has made a singular statement respecting Walker's *Hypena damnosalis*, which (as it is entirely incorrect) ought, I think, to be set right without delay. He

says: "Walker's type is in the British Museum, and is like the *perangulalis* of the Grote collection, and of American collections generally."

Now the type of Walker's *H. damnosalis* is neither more nor less than the female of *H. caducalis*, and, therefore, differs from *H. perangulalis* of the Grote collection in its shorter primaries, shorter palpi, in having entirely different markings, the two lines across the primaries not edged with white, the outer line undulated instead of simply subangulated. The *H. perangulalis* of the Grote collection, in fact, differs chiefly from the *H. deceptalis* of the same collection in its lighter colouring and its sex. It is a female, and is, in my opinion, unquestionably the female of *H. deceptalis*. Strictly speaking, I should say that *H. deceptalis*, being much more nearly related to *H. proboscidalis* than to the typical forms of *Bomolocha*, might be called a true *Hypena*.\*

Professor Smith had the disadvantage, in the case of the Hypenidæ, of working with the Walkerian arrangement, still more confounded by subsequent accessions; and when he got down to these he was pressed for time. It would be odd, therefore, if he failed to make any mistakes in his synonymic notes; even the best workers, when hurried, are not infallible.

## OBSERVATIONS ON THE HESSIAN FLY (*CECIDOMYIA DESTRUCTOR*) DURING 1893.

BY FRED. ENOCK, F.L.S., F.E.S.

I HAVE often been asked: "How is it that we hear so little about the Hessian Fly now?" "Is it exterminated from Great Britain?" "Do you think it really does any damage to the crops?" &c., &c. The following facts will be the best answer to these queries.

In Great Britain so little interest is taken by the public in Economic Entomology that we must not be surprised to find that editors of newspapers are unwilling to find room for short accounts of the occurrence of these pests, the doings at "John Barleycorn's" being of far more interest to general readers than those of the Hessian Fly in the barley corn *fields*: in one, the *Homo* species is apt to get injured and unable to bear his weight, and when found suffering from weakness at the joints, he is looked after and taken care of; but in the case of the species *destructor* injuring the crops and causing them to bow their bearded heads low on the ground, none but the farmers feel any the worse for this pest; and even they, though quite aware that "summat has got their crops," do

\* That is, if Staudinger is right in associating *H. proboscidalis* with *H. rostralis*.

not know what it is which has caused their crops to present such weakness. It is of no use relying upon the farmers to notice these crop pests, for not one out of fifty knows the appearance of the Hessian Fly; and we must not imagine it to be exterminated simply because the farmers have not reported it. So far from being exterminated, this special pest has been having a fine time of it during 1893 in South Devon, where, during a fortnight's holiday in August and September, I found it in the greatest profusion, principally in the puparium state, though many larvæ were also found, and since covering in the infested stubble collected, many of the flies have emerged, besides a few parasites.

The immunity from all interference which the Hessian Fly and other crop pests enjoy in "our right little, *tight* little island," does not tend to decrease their number, so that we must not be surprised to find many wheat and barley fields held in possession by this most persevering enemy. Many of the fields examined in South Devon were "eaten up with maggots," the typical bent straws indicating the presence of the pest were to be seen on every side in wheat and barley fields alike. Their backward state in May and June rendered the plants particularly favourable for the reception of eggs from the main brood, no doubt every female doing her best to be fruitful and multiply by laying the full complement of some one hundred and fifty eggs, distributing them over some dozen or twenty plants, in many cases at both first and second joints of one stem. Only to-day (Sept. 21st) on one, but two inches long, I found eight at the first knot and four at one above. I paid my last visit to a wheat field, Sept. 4th, when I found the crop cut, so was enabled the better to examine the stubble; on pulling up a number of plants, I found puparia on *every* one, without exception. Six of them yielded sixty-three, while from one alone I took no less than twenty-seven, most of which were close down at the base of the stems, below the ground-line. The owner told me he did not reckon he should get more than three bushels per acre, while others "were not worth cutting." By far the greater number of these "flax-seeds" are left in the stubble, protected from all harm and chance of being destroyed, the clover or grass, with which most of the fields are laid, forming an additional protection later on, so that a vast number of flies will emerge next year, ready to spread through neighbouring fields. The only remedy which can be applied is to plough the field, run the scuffer through, collect the stubble into heaps and *burn* them.

There is an old saying about "a little learning being a dangerous thing," but I do not think it would be in the case of the Hessian Fly, as it might prevent the farmers from ignorantly putting in a crop of puparia each year, by spreading the screenings from the threshing machine with the rough manure. This I found to be the habit of every farmer to whom I spoke. *Nothing*



but *burning* these screenings will destroy the innumerable host of "flax-seeds," which are shaken out of the straw when threshing. Farmers appeared most desirous of learning all they could about this pest, and I would most respectfully suggest to Her Majesty's Board of Agriculture, the advisability of having printed a large number of illustrated sheets of the Hessian Fly, &c., sending them to the various County Councils for FREE distribution to the farmers.

I am continuing my experiments with the parasites, and have, with the kindly co-operation of Dr. C. V. Riley, introduced our *Semiotellus nigripes* into the United States, and hope to do the same for other countries now infected with the Hessian Fly, as no doubt these parasites are the best friends the farmer could have for keeping in check this pest.

11, Parolles Road, Upper Holloway, London, N.

## DEILEPHILA EUPHORBIAE IN ENGLAND.

BY REV. J. SEYMOUR ST. JOHN, F.E.S.

IN the interests of entomology as well as of truth, it is, I think, necessary to lay before your readers the testimony of Mr. F. J. Hanbury and Mr. J. Fry (the captor), as to the finding of larvæ of *D. euphorbiae* in 1889, which I recorded in the 'Entomologist.' My reason for doing so is this:—Seeing in the July (last) number of the 'Entomologist's Record' that Mr. Tutt stated that the species had not been taken in this country for some "three-quarters of a century," "with the exception of an occasional immigrant," I wrote to his magazine reminding him of the above capture. Neither my letter nor even an acknowledgment of it appeared in the August number. I wrote to Mr. Tutt on the subject, and in the September number appeared my letter with a long note appended by Mr. Tutt, in which he impugns, with exceedingly bad taste, the veracity of Mr. Fry. That your readers may judge for themselves, I give in full what is written in the September number of the 'Entomologist's Record' together with letters written by Messrs. Hanbury and Fry.

From the 'Entomologist's Record,' vol. iv., pp. 248—249:—

"DEILEPHILA EUPHORBIAE.—I read in the 'Current Notes' of this magazine for July, 1893, the following statement:—'*D. euphorbiae*, with the exception of an occasional immigrant, has not been British for some three-quarters of a century.' Is this quite correct? I believe the 'perfect insect' has *not* been taken in this country, but larvæ have been found. A young friend of mine found, in the autumn of 1889, thirteen nearly full-fed larvæ on the West of Cornwall, feeding on

*Euphorbia paralias*. He brought them home and entrusted the pupæ to my care, for they turned very soon after capture. Three died in pupating, one died during the winter, and nine came out perfect specimens, three of which are now in my cabinet. For fuller information I refer your readers to the 'Entomologist,' vol. xxiii., pages 18 and 319.—J. SEYMOUR ST. JOHN, 42, Castlewood Road, Stamford Hill. July 21st, 1893. [We were fully aware of the reports referred to by our correspondent, but at the same time venture to suggest that the statement in the 'Current Note' referred to is substantially correct. In the face of what is known of this species in Britain, the statement 'this very rare insect in Britain has this year re-appeared. A young friend this autumn came upon thirteen nearly full-fed larvæ,' &c. ('Entomologist,' xxiii. p. 18) wants considerable amplification. Who is 'the young friend'? What has he to say about the coming upon 'thirteen nearly full-fed larvæ'? Mr. St. John has to rely on the statement of a 'young friend,' and this makes all the difference. If he had taken the species himself it would have been another matter. Mr. St. John further states that 'the ten pupæ' (which successfully changed from these larvæ) 'were entrusted to my care,' so that he evidently never had the larvæ, an important item, considering how easy pupæ are to obtain. Mr. St. John exhibited three of the nine specimens reared, at the meeting of the Ent. Soc. of London, as 'bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast, in September, 1889' (Trans. Ent. Soc. of Lon., 1891, p. xxxi.) He records having searched for the larvæ himself in July, 1890, 'on the spot where they were found the previous autumn' but 'failed to discover any trace whatever of larvæ, young or middle aged.' Mr. St. John must forgive our scepticism, but until we know something of the captor of these larvæ, we shall, in common with most British lepidopterists look on Mr. St. John as a probable victim in the matter. It would be interesting, however, to know the present whereabouts of these nine specimens which have been recorded, so that at any rate they may be distinguished from those that were sent on their wanderings last winter. We notice that Mr. St. John mentions nine specimens as being reared, in the paragraph above, but in September, 1890, he only mentions eight as having been reared, and one that looked like passing a second winter in the pupal stage.—ED.]"

Copy of Mr. Fry's letter :—

"51, Stamford Hill, N., 2nd October, 1893.

"Dear Mr. Hanbury,—I am surprised to hear that a doubt has been thrown on the genuineness of the specimens of *D. euphorbiæ* that were bred by Mr. St. John from the larvæ that I found in 1889. The details of my capture are as follows:—I was staying at New Quay, Cornwall, with my parents in August of that year. In a little sandy bay at the foot of the cliff, about two miles away, I found eighteen or nineteen of these caterpillars feeding on the Sea-spurge, which grew in one spot plentifully. Most of the specimens were full fed, but a few were only half fed. Five or six of my larvæ died, the remaining thirteen, as you know, pupated, forming loose cocoons with the sand. You will doubtless remember that in the first instance I brought them to you, not knowing what I had found, and it was by your advice that



I took them (all save one pupa, which I gave to a school-fellow named Price, and which was also successfully reared) to Mr. St. John to ask him to rear them. He had twelve specimens in all, three of which died, but nine emerged. Of these nine, I gave one to you, and three to Mr. St. John for the trouble he took. The other five specimens remain in my own possession. My father was with me when I found the caterpillars.

"Trusting these details will silence the doubts so unjustly cast upon Mr. St. John's statements,

Believe me, yours very faithfully,

JOHN FRY."

Copy of Mr. Hanbury's letter :—

"37, Lombard Street, E.C., October 16th, 1893.

"My dear St. John,—Through your recent holiday and absence from town, you have probably not yet seen the way in which the correction you sent to the 'Entomologist's Record' on the subject of the capture of *D. euphorbiæ* has been treated. As to the good taste of the remarks which are appended to your note, I need say nothing; they are evidently written with a view to 'drawing' you on the subject. Under the circumstances, however, I think it is a case in which there can be no possible reason for maintaining secrecy any longer. I wrote to Mr. Fry on the subject, and enclose his reply, and have since seen him personally. He quite agrees with me that there is nothing to be gained by withholding information which he at first asked us not to divulge. I hope, therefore, you will see your way to sending a note to the 'Entomologist' on the subject, quoting Mr. Fry's letter, and, if you like to do so, my own also. You will doubtless remember that in the first instance Mr. Fry brought the *euphorbiæ* to me, not knowing what they were, and it was by my advice that he took them on to you to rear for him; I can therefore substantiate your statements in every particular.

Believe me, yours faithfully,

FREDERICK J. HANBURY."

A word as to the apparent discrepancy between Mr. Fry's letter and my account as to the number of the larvæ he found. I was under the impression that the thirteen *euphorbiæ* he brought back to town represented the total number he found. But the discrepancy in no way tells against the facts. I have some of the sandy cocoons in which the larvæ spun up now in my possession. I may add that Mr. Barrett has had no hesitation in admitting the capture of these larvæ as genuine in his book. It is a matter of no moment to me whatever whether Mr. Tutt believes in the genuineness of these *D. euphorbiæ* as British or not, but I do wish entomologists to know that Mr. Fry is not the inventor of a fraud, and that I should hardly be so foolish or wrong as to publish the capture, and exhibit specimens publicly before a meeting of the Ent. Soc. of London without first of all being quite sure of my ground.

42, Castlewood Road, Stamford Hill, N.



## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANÉ, M.A., M.R.I.A., F.E.S.

(Continued from p. 273.)

## ZYGÆNIDÆ.

INO STATICES, *L.*—Widely distributed throughout Ireland, and locally common in some places. Westmeath, Cromlyn (*Mrs. B.*), and very abundant at Killynon; also at Drumreask, Monaghan; at Galway and Woodlawn (*A.*); Markree Castle, Sligo; Bandon, Cork (*L.*), &c.

ZYGÆNA PILOSELLÆ, *Esp.*, v. *nubigena*.—This was first recorded by Mr. A. G. More, formerly Curator of the Museum of Science and Art, Dublin, from Castle Taylor demesne, Co. Galway. Mr. Birchall was of opinion that the type as well as the variety were found by him; the former at Sir J. Redington's demesne at Claring Bridge, and the latter at Kilcolgan and Ardahan; but I believe it is now generally agreed that the Galway burnet as well as the Scottish insect should all be classed as the variety *nubigena*. It seems to be widely spread, but very local in the west of Co. Galway from Salthill, where it is abundant (*R. E. D.*) through the Barony of Dunkellin to the Co. Clare. The type is described by Zeller in the 'Isis' as frequenting open places among birch and fir woods. Guenée states that the v. *nubigena* frequents open fields among mountains, and not shady places as *minos*, from which it differs by the border of the hind wings, and especially by the internal angles, which are tipped with dark grey; by the red spots on the fore wing, which extend as far as the cellular bifurcation; and by the body being dark brownish black instead of blue. The following memoranda on the distribution of the insect in Great Britain may be of interest:—Cornwall ('Science Gossip,' xvii. p. 41, &c.); Abersoch on the north shore of Cardigan Bay (*Entom.* xxiii. p. 366). Two dark forms from Carnarvonshire were exhibited, by Mr. Jenner Weir, at a meeting of the Entomological Society. Dr. Buchanan White records it from Forfarshire and at Oban (*Entom.* ix. p. 142).

ZYGÆNA TRIFOLII, *Esp.*—Local and rare. Castle Taylor, Galway (*A. G. M.*); Armagh, one specimen (*J.*); Inishowen Head, Co. Donegal (*W. E. H.*); in some numbers in a meadow in Monaghan near Favour Royal, Tyrone.

ZYGÆNA LONICERÆ, *Esp.*—Local and rare, but more abundant where found than the preceding. It was first captured by the Rev. W. F. Johnson at The Mullinures, near Armagh, in abundance, where was also taken one *Z. trifolii*. I also took a single specimen at Ballinskelligs Bay, Kerry, in 1888.

ZYGÆNA FILIPENDULÆ, *L.*—"Everywhere, but most common on the eastern side of the island. It occurs on the same ground

as the *v. nubigena* of *pilosellæ*, but in comparatively small numbers" (B.). The Rev. W. F. Johnson has a remarkable aberration with both fore and hind wings very much rounded, and one of the central spots of right fore wing absent. A small race occurs at Belleisle, L. Erne, with small spots, often confluent as in vars. of *trifolii*.

#### SYNTOMIDÆ.

*NACLIA ANCILLA*, L.—I possess one of two specimens taken in flight in an old oak woodland in Galway (R. E. D.). Its occurrence inland in such a locality is of the greatest interest as an addition to our indigenous fauna, especially in a portion of the ancient forest lands of a county which seems to have preserved more rare species, both of southern and northern origin, than any other in Ireland. There can be no doubt of the bona fides of the captor, who has been extraordinarily successful in working for five years in unexplored and little known localities.

(To be continued.)

#### NOTES AND OBSERVATIONS.

*EPINEPHELE HYPERANTHES*.—I have in my cabinet a specimen of the lanceolate aberration of *E. hyperanthès*, described and figured from Mr. Frohawk's specimen in the 'Entomologist' for October (*ante*, p. 281). It is a female, and I netted it at Mullion in Cornwall, in August, 1889, having noticed its variation when settled. To show this I set the under side. The only difference from that figured is, that on the under surface of the fore wing there are three white-centred black spots in tawny rings instead of two; and on the upper surface, the tawny rings are almost obsolete, and the upper ocellus of the hind wing has no white centre.—W. S. RIDING; Buckerell Lodge, near Honiton.

ADDITIONAL LOCALITIES FOR IRISH LEPIDOPTERA.—The following localities have been overlooked by Mr. W. F. de V. Kane in his list of Irish Lepidoptera, now in course of publication in the 'Entomologist':—*Argynnis aglaia*, Castlerock, Co. Derry; *A. paphia*, Benburb, Co. Tyrone; Armagh; and recently (July) at Brown Hall, Ballintra, Co. Donegal. *Vanessa atalanta*, Armagh; *V. cardui*, Armagh. *Epinephele hyperanthus*, Armagh, not uncommon. *Cenonympha typhon*, Churchill, Co. Armagh, and Ardara, Co. Donegal. *Thecla rubi*, Churchill, Co. Armagh. *Chero-campa elpenor*, Armagh. *Smerinthus ocellatus*, Armagh. *Macroglossa stellatarum*, Armagh; and I received one last month from near Ballyshannon, Co. Donegal. *Trochilium crabroniformis* is mentioned as occurring at Armagh; I only took it at Castledermot. — W. F. JOHNSON; Armagh, Oct. 11, 1893.

THE BUTTERFLIES OF CORSICA.—I am rejoiced to learn from Mr. Coleby's notes (*ante*, p. 298) that the families I believed to be unrepresented in Corsica do, nevertheless, put in a very limited claim for existence in the early part of the year. It awakened in my breast a strong desire to be there in March, April, and May, my own observations having been limited to the



month of June. But here I pause, because there is one circumstance which detracts seriously from the value of this gentleman's testimony, and which makes me hesitate before accepting him as an absolutely trustworthy guide. He is—to put it mildly—slightly inaccurate in his authorities. He states, for instance, that “Lang, in his ‘*Rhopalocera Europæ*’ (of which there is only one edition), gives *Erebia manto*, *Melanargia ines*, *Thais rumina*, *T. polyxena*, &c., as being found in Corsica.” It will scarcely be credited, but Lang does not mention Corsica as a locality in connection with any one of the four insects named. He states, again, that Mr. W. F. Kirby, in his ‘*Manual of European Butterflies*’ (only one edition), names Corsica for *Doritis apollinus*, *Thais cerisyi*, *Syrichthus therapne*, *Hesperia nostradamus*, *Erebia melas*, *Cæonympha corinna*, &c. This statement is equally inaccurate, as far as *T. cerisyi* and *E. melas* are concerned; *S. sao* var. *therapne* and *C. corinna* are included in the list of my own captures. Mr. Kirby's authority for *D. apollinus* is Ochsenheimer, who puts it under the head of Sardinia, which country Mr. Kirby, for the sake of convenience, includes with Corsica. Mr. Coleby says:—“I have found two specimens of *E. melas*, but of these two I will not be certain”; as though one should say—“here is a peach for you, but perhaps it is only a gooseberry.” His *Thais rumina* was not only “a battered specimen,” but it was also “in very bad condition,” as indeed battered specimens are wont to be. There is a downright honesty about these two avowals which commands my utmost respect. Is Mr. Coleby sure that he took *Lycæna bætica* in Corsica? because Kirby gives *L. telicanus*, but not *bætica*; and I took two undoubted specimens of the former. *Pieris chloridice*—a South Russian July insect—is not a very likely species to be taken in Corsica in March. If Mr. Coleby can establish this, it will be an interesting fact. As to “over eighty different sorts,” I confess I am sceptical, even when such vars. as *aristeus* of *Satyrus semele*, *tigelius* of *Pararge megæra*, and *therapne* of *S. sao*, are thrown in as “sorts.” At the same time, I am free to allow that my own estimate was under the mark; but then it did not pretend to be more than a guess, and I was not fortunate enough to have Mr. Kirby's excellent little ‘*Manual*’ at hand to refer to. Since my return, I have looked up the two doubtful *Lycænas*, mentioned in my paper. I have seen the coloured figure of Boisduval's *L. argus* var. *callopis*, and it does not at all agree with the Blue that was so common at Tattone, which seems more likely to be the *L. ægon* var. *corsica* of Bellier de la Chavignerie, whose description exactly fits it; and what we took for a peculiar form of the female of *L. icarus*, is probably the *L. astrarche* var. *æstiva*, or southern summer form, of Staudinger.—R. S. STANDEN; 67, Earl's Court Square, S.W.

**BOARMIA REPANDATA PARTIALLY DOUBLE-BROODED.**—At the end of May last some ova of *Boarmia repandata* were sent to me from the South of Ireland. They began to hatch on 3rd of June, and for about a month the larvæ from them fed up without showing any material difference in relative size. Early in July some few of them began to exhibit a disposition to grow much faster than the others, and on 22nd two were preparing to pupate. At this time about one-half of the brood had developed this tendency of feeding up rapidly, and these all pupated about the middle of August, the moths from them emerging between the 10th of that month and 17th September. The other half of the brood showed no increase in size, and are now hybernating in, to all appearances, the same condition as they were in at the end of July. Mr. McArthur informs me that larvæ



from the same batch of ova, that have been under his care, behaved in a similar way.—ROBT. ADKIN; Lewisham, October, 1893.

**CANNIBALISM IN CUCULLIA VERBASCI LARVÆ.**—Rickmansworth, June 5th. *Verbascum lychnitis* here appears to have been used as an experiment by *Cucullia verbasci*. On the above date I collected some fifty larvæ, the majority being small. Notwithstanding the various substitutes, all London entomologists know the difficulty in procuring food for these larvæ. It so happened in my case through scarcity of food, the larger larvæ fell upon the smaller and devoured them, the head being the only portion left. I believe there are other larvæ which indulge in this apparently inexcusable practice. This is the first occurrence in my recollection of *C. verbasci* larvæ having evinced themselves cannibals.—H. W. BELL-MARLEY; Hammersmith, W.

[The larvæ of several species of Lepidoptera are known to be cannibals, and possibly many others become so in confinement, when the supply of vegetable food is inadequate in quantity or unsuitable in kind.—ED.]

**SUGAR AND INDOOR-LIGHT.**—I have tried sugaring, up to date, on three nights, viz., September 3rd, 4th, and 15th. On the first occasion, I got no results; on the 4th, I took three moths, which I have not yet made out. One of these last was found on a stone, and the other two on the trunk of a pear tree near our house. They were all Noctuæ. On the 15th inst., I visited the sugar several times during the night; for the last time, at 12.50 a.m., and there were no moths. Here, in the mountains, at nearly 4000 feet elevation, sugaring is sometimes attended with difficulties, as there is often a strong wind blowing, which makes it difficult to carry the lantern or lamp from place to place, when visiting the patches. The recipe for my mixture, taken from a German work, which may be of interest, is as follows:—Beer and honey, in the proportion of two-thirds of the former to one-third of the latter, add a few drops of rum, and bottle the whole. The day before using, shake the mixture well and warm before the fire. I should add, that the honey used for my composition was of the best native kind, corresponding to the "Californian honey," as it is called; whereas the coarsest quality is always preferable, being of a thicker consistency, and less liable to waste through soaking into the trees and stones (the latter if porous or limestone) on which it is spread. Trees having a smooth, tough bark seem preferable to those having soft ones. Indoor-light, in this wholly unexplored locality, on the other hand, has been fairly productive up to the present. I have "mothed" in a room facing south, and overlooking a rocky, fertile plain of great extent, on five occasions, viz.:—August 8th (when I captured 33 specimens); on 16th, up to 1 a.m. (28 moths); September 2nd, there was a half-moon up to about 10.30 p.m. (17 examples); 4th (30 moths); 15th, staying up to 2.45 a.m. (21 moths, including a specimen of the beautiful and rare *Agrotis constanti*, Mill.). On this last occasion the night was warm and still, the thermometer registering 69° Fahr. As regards the rest of my captures (among which I anticipate some rarities), which have not yet been identified, I hope perhaps to send an account later.—F. BROMILOW; Caussols, Alpes-Maritimes, France, Sept. 19, 1893.

**AUTUMNAL EMERGENCE OF ARGYNNIS PAPHIA.**—The excessively dry and hot weather of the past season has brought about some remarkable incidents in the emergence of certain species of Diurni which have come under my

notice. I think one of the most exceptional cases is that of a second emergence of *A. paphia* which I have succeeded in rearing this autumn. This species was fully a month earlier on the wing this year in the New Forest, and I obtained a number of ova from the var. *valezina* which were deposited during the last week of June; they hatched about the end of the first week in July; the majority of the larvæ entered into hibernation immediately after their exit from the egg, which is the usual habit of the species. Upon examining the plants of *Viola canina* in the middle of August, I was very surprised to find four *paphia* larvæ in three different stages, *viz.*, after the second, third and fourth moults; and on the 27th Aug. I found another in the third moult. The first one pupated on the 1st September, and produced a fine female on the 18th Sept.; the last of the five pupated on the 18th Sept., producing a male on the 15th of this month, the other three emerging as follows: a male 21st Sept., another male on the 24th, and a rich specimen of the var. *valezina* on the 8th October. On Sept. 20th I noticed two more larvæ feeding, which were then after their second moult and are now fully grown.—F. W. FROHAWK; Balham, S.W., Oct. 18.

NOCTUÆ AND FLOWERING GRASS.—With reference to Mr. G. O. Day's note (Entom. 229), I can endorse his remarks as to the remarkable attractiveness to insects of the species of grass referred to. In the past two seasons, on Wimbledon Common, I have regularly worked this grass while it is in flower, which is during the latter part of August and the whole of September, and have always found it more profitable than sugar. I do not think the attractive power is due to honeydew; insects are only attracted to it during the period of inflorescence, and cease coming directly that is over. They are quite as stupified as at the willow or ivy blossoms. The genus *Xanthia* seems especially fond of it; I have sometimes seen hundreds of *fulvago* and *flavago*, and have also taken, more or less commonly, *Tapinostola fulva*, *Hydræcia micacea*, *Noctua glareosa*, the genus *Anchocelis*, and most of the usual autumnal Noctuæ and some Geometræ. The grass is also extremely attractive to gnats; I have frequently seen dozens on every flowering spike.—E. H. TAYLOR; 52, Mimosa Street, Fulham, Oct. 18, 1892.

VARIETY OF POLYOMMATUS PHLÆAS.—At Eastbourne, during the third week in September, I captured a variety of this butterfly, which has the left fore wing almost quite white.—W. HARCOURT BATH; 195, Ladywood Road, Birmingham.

## CAPTURES AND FIELD REPORTS.

COLIAS IN BRITAIN, 1893:—

*Berkshire*.—One *C. hyale*, May 7th (*ante*, p. 200).

*Cambridgeshire*.—One example of *C. edusa*, Aug. 18th (*ante*, p. 276).

My friend, Mr. J. English, captured a female specimen of *C. hyale* on August 13th, which deposited a number of ova, but these proved infertile. I saw a male *C. edusa* on September 3rd, but was unable to capture it.—H. FLEET; 15, Halifax Road, Cambridge, Sept. 14, 1893.

*Cornwall*.—One example of *C. edusa* seen on April 5th, and another on 8th of the same month (*ante*, p. 162).

About 4.30 p.m. on Sept. 1st I took three males of *C. edusa*, in fresh condition, at rest on a hedge near Penzance. The day was beautifully



sunny, but though I had passed along the same road about 11 a.m., and had been working for insects during the day, I had seen no others of the same species. The next day, however, on my journey to London, I saw three or four while passing through Cornwall.—B. W. ADKIN; Morden Hill, Lewisham, S.E., Sept. 16, 1893.

On Aug. 1st, near Penzance, not far from the coast, I took a rather large male *C. edusa* in very fair condition.—W. J. LUCAS; Cumberland Villa, Gordon Road, Kingston-on-Thames, October 9, 1893.

*Devonshire*.—At Budleigh Salterton, S. Devon, during the last week in July, I saw two *C. edusa*, the first on the 24th, and the other on the 30th. No more were observed from that time until August 14th, from which day, until my departure on the 19th, several (nearly a score) *C. edusa* occurred, but only on an extensive piece of marsh-land adjoining the town, whereas last year they were distributed throughout the whole neighbourhood. *Vanessa atalanta* I found very common, *V. io* and *V. urticae* being rather scarce, whilst a single specimen each of *V. polychloros* and *V. cardui* was also taken.—HERBERT F. HUNT; 14, Thistlewaite Road, Sept. 11, 1893.

Though I have been unable to do much practical work this season, yet I have had time to notice the abundance here of *C. edusa*, and a short comparison between the seasons 1892 and 1893 may be interesting to your readers. They are almost, if not quite, as plentiful as last year, and seem to be everywhere, in gardens, lanes, clover-fields, and especially along the sea coast. Last year, out of over 400 specimens I netted, there was a considerable majority of females in this district, but this year males are by far the more abundant. I have only noticed one variety *helice* this season, in contrast with over a dozen I took last year and more than a dozen missed. Up to the time of writing (October 12th) they are still abundant, and most are in beautiful condition. Last year the last one I saw was on Nov. 10th. As regards their first appearance, both in '92 and '93 I saw the first newly emerged ones during the third week in July. I have also noticed less variety among them this year, though this may be partly accounted for by the fact that I have not had so much time for observation.—(Rev.) W. R. S. MAJENDIE; Sid House, Sidmouth.

*Dorsetshire*.—*C. edusa* abundant during last two weeks of August (*ante*, p. 302).

On August 28th, at Swanage, *C. edusa* swarmed in one place, and I saw one specimen of *C. hyale*, but failed to capture it.—F. W. FREIR; Elm House, Walthamstow, Essex, Oct. 4, 1893.

I left Weymouth at the end of August, and at that time *C. edusa* was just beginning to appear, with indications that it was likely to be fairly plentiful. Last year it was in full swing in the same place by the end of July.—(Rev.) W. CLAXTON; Hartley Wintney, Winchester.

*C. edusa* common here this year; I took my first specimen on June 29th.—E. G. WANHILL; Poole, Dorset, Oct. 11, 1893.

On June 30th *C. edusa* was on the wing in profusion upon the downs at Swanage.—J. A. MACKONCHIE; The Hirsell, Coldstream, N.B., Oct. 20.

On the 16th Aug. we saw several *C. edusa* at Swanage, of which we secured one, a fine male, measuring just over two inches across. We also secured some fine specimens of *H. actæon* on the same day.—GEORGE E. BERGMAN; 29, Priory Road, Kilburn, N.W., Sept. 3, 1893.

[Other captures of *C. edusa* in Dorsetshire will be found on p. 323].

*Gloucestershire*.—One example of *C. edusa* seen April 28th (*ante*, p. 222).



*Hants.*—I saw a very fine male *C. edusa* yesterday in a clover-field near this house, the only specimen I have seen up to the present date. — Capt. S. G. REID; Froyle House, Alton, Hants, Sept. 6, 1893.

On Aug. 8th we saw a *C. edusa* on the cliff at Hordle, near Milford-on-Sea. On the 17th we saw another near Yarmouth, Isle of Wight. — GEORGE E. BERGMAN; 29, Priory Road, Kilburn, N.W., Sept. 3, 1893.

*Hants and Dorset.*—During a fortnight (Aug. 22nd to Sept. 5th) spent on the borders of Dorset and Hampshire, I observed six specimens of *C. edusa*. As far as I can judge of the locality, three of these were observed in Dorset (Wimborne district), and three in Hampshire (Bournemouth district). Lepidoptera generally seemed to be remarkably scarce, with the exception of *Chrysophanus phlaeas*. — HAROLD HODGE; 2, Essex Court, Temple, Oct. 16, 1893.

*Isle of Wight.*—Several specimens of *C. edusa* seen May 11th (*ante*, p. 198).

*Kent.*—One *C. hyale* captured May 22nd (*ante*, p. 223); several *C. edusa* seen near Dover between April 18th and 23rd (*ante*, p. 198).

On Wednesday, Sept. 6th, I captured a male *C. edusa*, and saw another near Folkestone; and on the 9th my friend Mr. Hills, of that town, caught a fine female of the same species. We only saw these three examples during the fortnight I was there. I also took one *V. cardui* in splendid condition, and this was the only specimen I saw, neither could I hear of any other having been seen. — W. E. BUTLER; Hayling House, Reading, Sept. 15, 1893.

I captured a specimen of *C. hyale* on the downs at Dover on Aug. 13th, but I did not see even one example of *C. edusa* during the fortnight I spent at Dover. — W. J. KAYE; Worcester Court, Worcester Park, Surrey, Oct. 21.

*Middlesex.*—Three specimens of *C. edusa* captured on April 2nd (*ante*, p. 252).

*Somersetshire.*—On the 16th of August last, when in the train, riding from Crewkerne to Chard, I saw thirteen *C. edusa* on the railway bank; but although I several times looked for the same species next day, when on my way to Plymouth, I did not catch sight of any. I may mention that near Worthing, in Sussex, where hundreds could have readily been caught last year, not one put in an appearance, at least all through August. — HUGH E. HOPKINS; 153, Camden Grove North, Peckham, S.E., Oct. 19.

During a three weeks' stay at Shepton Montague, near Castle Cary, Somerset, I caught twenty-five male specimens of *C. edusa*. As to females, I believe there were none, though I saw many more butterflies than I captured. Except two, all were caught close to the railway, between August 25th and September 14th, inclusive. One specimen slightly varied; the spot is very small, and has the *edusa* yellow in the middle of it. Does this spot ever disappear altogether? *Vanessa atalanta* and *Macroglossa stellatarum* were common. I caught two hibernated specimens of *V. io* at St. Bee's, Cumberland (not Lancashire). The days on which *C. edusa* were captured were:—August 25th, 1; 29th, 2. September 3rd, 1; 4th, 3; 5th, 2; 6th, 3; 9th, 2; 11th, 2; 12th, 5; 13th, 3; 14th, 1. Total, 25. — JOHN WEBSTER; Barony House, St. Bees, Carnforth, August 20, 1893.

*South Wales.*—In reply to Mr. Anderson's note (Entom. 276), I am pleased to say that *C. edusa* turned up here again this year in fair numbers. I have taken between thirty and forty specimens, and seen three or four times as many more, but hitherto have taken only one var. *helice*. In the

spring but one or two hibernated specimens were to be seen. On June 29th I took the first freshly emerged insects, two females and six males (one with the wings not yet fully expanded); after that they were by no means scarce up to the first week in August, when they seemed to vanish for a time, but within the last fortnight or so are again putting in an appearance in fine condition. No *C. hyale* have been seen here this year.—SPOTSWOOD GRAVES; 29, Victoria Street, Tenby, Sept. 17th.

I noticed four specimens of *C. edusa* near the sea coast on Aug. 29th last.—T. B. JEFFERYS; Laugharne, Carmarthenshire.

*C. edusa*, chiefly males, was fairly abundant during September at Tenby. I did not take the var. *helice*, but was told that two or three had been taken.—EDGAR J. MEYRULE; Durham.

*Sussex*.—Two examples of *C. hyale* captured and one missed on Aug. 4th, and one taken on Aug. 16th. No *C. edusa* observed up to last date (*ante*, p. 276).

On Sept. 5th I took a male *C. edusa* on the downs near Brighton, and on the 9th saw two more at Falmer, on the Lewes road.—H. F. HUNT; 14, Thistlewaite Road, Clapton, N.E., Sept. 11, 1893.

On the 5th of this month, when I was on the downs near Brighton, a butterfly flew over my head as I was approaching the top of a hill; on looking back I saw it was *C. edusa* and chased it, but without success. When sitting in Steyne Gardens, Brighton, on the 13th, I was told by a friend that a yellow butterfly had just settled on a flower-bed opposite; I watched the spot, and soon a *C. edusa* rose and continued flying about the geraniums and lobelias. I went quite close to it, but did not attempt to catch it; it was a male.—D. P. TURNER; 14, Havelock Road, Tonbridge, Sept. 15, 1893.

I saw a fine specimen of *C. edusa* on Beechy Head, Aug. 29th last, but it flew over the cliff before I could catch it.—H. W. SHEPHEARD-WALWYN; Bidborough, near Tunbridge Wells, Sept. 15, 1893.

I saw a male specimen of *C. edusa* on Aug. 30th, the first I have seen this summer; yet last year, this time, they were swarming here.—L. S. GILES; 72, North Street, Chichester, Sept. 2, 1893.

RANDOM NOTES.—*Hesperia actæon* was, I suppose, like everything else, a month earlier than usual, for when I got to Weymouth, at the end of July, there were only a few worn males to be seen. I left at the end of August. I took nothing worth mentioning at Weymouth, except a beautiful form of *Bryophila glandifera*, of a uniform olive-green tint on the fore wings, markings faintly indicated by white lines, with hardly a trace of black; hind wings normal. But as I took this in a railway carriage, while journeying between Upwey and Weymouth, the locality is a little uncertain. Is it possible that *Cerura furcula* is double-brooded? Newman gives July for the larva; Stainton gives September; whilst last year a larva in process of moulting for the first time was sent me by Miss Chasoner from the New Forest in October, which pupated late in November, and, kept indoors, produced the moth on May 22nd; and this year a nearly full-grown larva arrived from the same place on October 3rd. The season here, Hartley Wintney, has been very poor, so far as sugaring goes. I got two *Dipterygia pinastri* on May 22nd and 24th, but no more afterwards, though this is a common insect with us; and one black *Apamea oculatea*. Usually, however, there was nothing on the trees at all. By day, I can never do much; but I noted that *Vanessa polychloros* began to emerge on June 18th, and there-



after was rather abundant; whilst *Sphinx ligustri* also was unusually plentiful, the first specimen occurring on May 26th. *Argynnis paphia*, *A. adippe*, and *A. selene* were all much worn, and practically over, by the end of June.—(Rev.) W. CLAXTON; Hartley Wintney, Winchfield.

RHOPALOCERA IN 1893.—Third broods of the following butterflies have appeared this season in the midlands, namely, *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Polyommatus phlæas*, and *Cænonympha pamphilus* (partial); and in the South of England I may add, *Lycæna astrarche* (partial), *L. icarus* (partial), and *Pararge megæra*, all of which usually only possess two flights in this country. Possibly *P. egeria* and a few others may also have been three-brooded during the past season, but I can only personally answer for those named.—W. HARCOURT BATH; 195, Ladywood Road, Birmingham.

LEPIDOPTERA IN LONDON.—During the summer I observed the following species in a garden at Highbury:—*Vanessa atalanta*, *V. urticæ*, *Chrysophanus phlæas*, *Pieris brassicæ*, *P. rapæ*, *Macroglossa stellatarum*, *Catocala nupta*, *Uropteryx sambucata*, and many of the commoner Noctuæ.—HAROLD HODGE; 2, Essex Court, Temple, Oct. 16, 1893.

LEPIDOPTERA AT TENBY.—I was at Tenby during the first three weeks of September. *Vanessa atalanta* was very common; I did not observe many *V. urticæ*, and not a single *V. cardui* or *V. io*. *Polyommatus phlæas* swarmed. There were a considerable number of *Macroglossa stellatarum*; and I heard of several *Sphinx convolvuli* having been captured.—EDGAR J. MEYNELL; Durham.

NOTES FROM DORSETSHIRE.—*Macroglossa stellatarum* very numerous on geranium beds (have taken about 30). Sugaring rather disappointing. Ivy good, so far; amongst others I have taken two *Epunda nigra* on it. *Vanessa io* and *V. cardui* very scarce.—E. G. WANHILL; Poole, Dorset, Oct. 11, 1893.

NOTES FROM NORTH STAFFORDSHIRE.—A female *Vanessa c-album* was taken in the Vicarage orchard on September 17th; I heard also of one or two being taken at Market Drayton by Mr. Woodforde, and one or two at Haughton Rectory near Stafford. *V. atalanta* has been very plentiful this autumn in the whole district, as also has *Polyommatus phlæas*; *V. io* has been fairly abundant, but *V. cardui* has again been altogether wanting; nor have I heard of any appearance of *Colias edusa* this year. *Macroglossa stellatarum* has been recorded from Cheadle, but I have not observed it myself at Madeley.—(Rev.) THOS. W. DALTRY; Madeley Vicarage, Staffs.

CAPTURES OF LEPIDOPTERA DURING 1893.—My season practically commenced on February 19th, when a visit to Richmond Park produced *Nyssia hispidaria* in sparing numbers, with *Phigalia pilosaria* in fair plenty, and *Hybernina leucophæaria* in large numbers; two *Cheimatobia brumata* in good condition were also taken. The weather was very fine and warm, and I noticed the first *Bombus* of the season. On March 4th, in Epping Forest, the take included *P. pilosaria*, *H. æscularia*, and *H. leucophæaria*. On March 6th, *H. progemmaria* emerged, and was afterwards very plentiful. On March 21st, one *Teniocampa instabilis* was taken on a lamp-post at Buckhurst Hill. On Easter Sunday I was in Paris, and caught *Hipparchia* [*Pararge*] *egeria* in the Bois de Boulogne. On April 6th, I captured *Biston hirtaria* on a fence in Walthamstow. The 16th of April was fine and warm, and I observed hibernated specimens of *V. polychloros* and



*V. urticae* in Epping Forest, whilst the "whites" occurred in abundance; one *G. rhamni* was seen. On April 22nd, I saw *Polyommatus phlaeas* flying in the afternoon at Leppitts Hill, High Beech. A week later, in the northern parts of Epping Forest, *Hesperia tages* and *H. malva* occurred in plenty; whilst one *M. euphrosyne* was seen, but not captured. *Eupithecia abbreviata* appeared on April 30th. After this date captures came thick and fast, and consequently only the best can be recorded here. On May 7th, I obtained seventy larvæ of *Cidaria dotata* feeding on red currant, and can confirm the late Mr. Doubleday's statement, that in this district they are not found on black currant. This insect I breed in plenty every season, and it is extremely easily reared, every caterpillar turning in time to the imago. On May 8th, I took one *Eucosmia certata*, last year having obtained twelve in one evening. On May 20th, at Brockenhurst, my captures included a number of *Argynnis selene*, *P. egeria* (in splendid condition), *Nemeobius lucina*, *Bapta-temerata*, *Dasychira pudibunda*, &c. On May 21st, *Thecla rubi* were taken, but proved to be very battered specimens; *Gonopteryx rhamni* was extremely common, but much damaged. Other captures were *Tanagra chærophyllata*, in great numbers and perfect condition; *Iodis lactearia*, some of them beautifully green coloured; *Euclidia mi*, &c. Larvæ of *V. polychloros* were common, and in all stages of growth, from just hatched to full-fed. On May 22nd, still at Brockenhurst, I captured two more *N. lucina*; *Euchelia jacobæ* were just emerging in the prime of condition; countless *Fidonia* [*Bupalus*] *pinariaria* roamed in the pine woods, all males so far as my captures were concerned. Larva-beating produced many *Cymatophora* [*Asphalia*] *ridens*; and countless thousands of *Tæniocampa instabilis* and *T. stabilis*. Treacling was said to be a failure, although I did not try it personally. On May 27th, in Epping Forest, my captures included *Ephyra punctaria*, *Selenia lunaria*, and *Euclidia glyphica*. A friend took *Eurymene dolobraria* on the trunk of a beech tree. On June 1st, at Symonds Yat in Monmouthshire, *Abraxas ulmata* was very common. On June 9th, my father took a dozen *Lycena alsus* at Swanage. On June 11th, in company with my father, we proceeded to Brockenhurst, and even at that early date our captures included six dozen *Limenitis sibylla* in the most perfect condition; *Argynnis paphia* swarmed in myriads in grand condition; *A. adippe* was in very good condition, and fairly numerous. I never remember to have seen such swarms of butterflies before as on this day; every step sent hosts of insects flying, and it was difficult to follow any one insect, owing to its becoming lost amidst the general swarm. On June 18th I captured *A. aglaia* on the slopes of Cadir Idris, N. Wales; and on the actual top of the mountain I observed this insect and *Vanessa urticae*, the former species being on the stone cairns at the summit. The heat was very intense, with a calm air, and shade temperature above 90°. Our party suffered severely from the heat, and several narrowly escaped sunstroke. This was the hottest day of the whole year in that part of Wales. On June 30th, I treacled in Epping Forest, and found insects more attracted than they have been for years past; *G.* [*Thyatira*] *derasa* and *G.* [*T.*] *batis* swarmed. On July 9th, *Sesia myopiformis* was captured at Chapel End, Walthamstow. On August 6th, I went to Brockenhurst, and found everything over, and a remarkable scarcity of insects of any kind, save hornets and wasps, which were a perfect nuisance. The treacle at night attracted more hornets than moths, and only a very few ragged *C. sponsa* and *A. pyramidea* came to the bait. In the daytime scarcely any butterflies about, and none worth taking. On August 26th, I obtained chrysalides of *Papilio machaon* in Norfolk.

On August 28th, at Swanage, *P. phleas* was extremely plentiful, and very red in colour. On August 31st, at Yarmouth, I.W., *V. atalanta* was more plentiful than I have ever observed before, and I secured a dozen magnificent specimens. They were very fond of settling in the midst of a dense jungle of brambles, an almost inaccessible place. On September 2nd, I took *Ennomos tiliaria* at Bournemouth, on the gas-lamps. On September 10th, there were still some dozens of *P. phleas* in our garden, they having been there for some months. Not for the last eight years has there been so many of this interesting insect in this district as during this last tropical summer. On the whole, the past season has been the best by a long way since 1884. Whenever I tried treacle, the Noctuæ came in large numbers; and although quality was never allotted to my patches, I am more satisfied than ever with its attractive powers. My best evening occurred with a warm torrential downpour of rain, which damped my skin, but not my ardour.—F. W. FREIR; Elm House, Walthamstow, Essex, Oct. 4, 1893.

POLYOMMATUS (LAMPIDES) BÆTICA AT HASTINGS.—A beautiful specimen of this rare butterfly was captured at Hastings, during the third week in September, by a boy about ten years of age.—W. HARCOURT BATH.

CATOCALA SPONSA IN S.W. LONDON.—On the 18th September, a friend of my brother took a specimen of *Catocala sponsa* in the Earl's Court Road. He saw it flying past, and struck at it with his hat. The insect, which I now have, was rather spoilt by the blow it received, otherwise it appears to be in fairly good condition.—A. H. LOCOCK; 26, Courtfield Gardens, S.W.

[Probably an escape; but the 18th of September is a very late date for *C. sponsa*.—ED.]

COSMIA PALEACEA (EUPERIA FULVAGO) IN SHERWOOD FOREST.—This year, again, has been a good one for the above species. I began on the 29th of August, rather later than last year, my companion, as last year, being the Rev. W. Beecher, of Wellow. Putting up at Edwinstowe, we sugared over the old track, also trying a fresh ground, and were agreeably surprised to see *C. paleacea* in considerable numbers, two and three being on one tree, and all were in excellent condition, evidently just out. We also took *Epunda nigra*, and many others.—W. FERRIS; St. Matthew's Vicarage, Nottingham.

MACROGLOSSA STELLATARUM AT BOURNEMOUTH.—This species has been unusually abundant here during the last two months, and is in fair condition at present date.—W. McRAE; The Devonshire, Bournemouth.—October 23, 1893.

LEUCANIA EXTRANEA AND *L. VITELLINA*.—During a somewhat prolonged visit to the Isles of Scilly this year, I had the good fortune to take two specimens of *L. vitellina* and one of *L. extranea* in good condition. They were all taken at sugar during the first week of September.—B. W. ADKIN; Morden Hill, Lewisham, S.E.

VANESSIDÆ IN LANCASHIRE, 1893.—*Vanessa atalanta* and *V. urtica* have been exceedingly abundant this year in Lancashire, especially the first named. *V. cardui*, on the other hand, has been very scarce, as I have only seen one specimen, whereas last year it was common.—LIONEL STONES; Northwood, Seymour Grove, Old Trafford, near Manchester.



## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 4th, 1893.*—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Arthur Ernest Gibbs, F.L.S., of The Hollies, St. Albans, was elected a Fellow of the Society. Mr. F. Merrifield exhibited specimens showing the effects of temperature in the pupal stage on several species of Lepidoptera. *Vanessa polychloros* was much darkened, especially towards the hinder margin, by a low temperature. *Vanessa c-album* showed effects on both sides, especially in the female; they were striking on the under side. Several examples of the striking effect produced by temperature on the summer emergence (*prorsa*) of *Araschnia levana* were exhibited. Some *Vanessa io* showed the gradual disintegration, by exposure to a low temperature, of the ocellus on the fore wing, which in the extreme specimens ceased to be an ocellus, and was a remarkable confirmation of Dr. Dixey's views of the origin of that ocellus, as exemplified in the plate attached to his paper in the Entomological Society's Transactions for 1890. Mr. Goss stated that in his experience of *V. c-album* in Northamptonshire, Gloucestershire, Herefordshire, and Monmouthshire, the form with the pale under side was the first brood, occurring in June and July; and that the second brood, occurring from the end of July to October, was invariably dark on the under side. Mr. Jacoby, Mr. Merrifield, and the President continued the discussion. Mr. A. H. Jones exhibited Lepidoptera collected in Corsica in June last, including forms of *Polyommatus phlæas* (Vizzavona); *Lycæna astrarche*, in which the orange marginal band is very brilliant on upper and under sides of both wings (Vizzavona); *Lycæna argus*, the females of which are much suffused with blue, probably var. *calliopis*; a series of *Vanessa urticæ* var. *ichnusa*, bred from larvæ found at Vizzavona (4000 feet); *Argynnis elisa*, *Satyrus semele* var. *aristæus*, *Satyrus neomyris*, *Cænonympha corinna*, both spring and summer brood (Vizzavona); *Syrichtthus sao* var. *therapne*, and many others. Mr. G. C. Champion exhibited, for Mr. G. A. J. Rothney, a number of *Methoca ichneumonoides*, Latr. (female), taken at Bexhill, Sussex, showing great variation from the usual large black and red form to a small and nearly black one. Dr. D. Sharp exhibited a pupa of *Galleria melonella*, on which the eggs of a parasitic Hymenopteron, as he believed, had been deposited while the insect was in the cocoon. He also exhibited, from the collection of Alexander Fry, Esq., the hitherto unique *Aprostoma planifrons*, Westw. The genus was correctly assigned by Westwood to the *Colydiidæ*, though described as a Brenthid. Mr. J. J. Walker exhibited the following species of *Halobates*, viz.:—*H. sericeus*, Esch., from the Pacific; *H. sobrinus*, B. White, from Marquesas Islands; *H. wüllerstorffi*, Esch., from Marquesas Islands; *H. princeps*, White, from the China Sea; and a female of *H. wüllerstorffi*, with ova attached. Mr. W. H. B. Fletcher showed a variable series of seventy-five *Cymatophora or*, bred in 1893 from larvæ from Sutherland, a series of about forty *C. ocularis* bred-in from stock from Oundle. Also a series of thirty-three moths, all females, supposed to be hybrids between *C. ocularis* male and *C. or* female, from the above stock in each case, bred as a second brood in August and September, 1893. He stated that he placed the reputed parents in a muslin sleeve on a branch of *Populus nigra*, and did not open the sleeve until the resulting larvæ required fresh food. To the best of his belief the female parent had



no chance of pairing with a male of her own species. The supposed hybrids resembled the female parent, except that both orbicular and reniform stigmata were very conspicuous, being pure white filled up slightly with black, whereas in *C. or* they are usually inconspicuous and the orbicular are sometimes wanting. None of the *C. or* bred had the stigmata developed so fully as had the hybrids, which were most uniform in this respect. Mr. F. J. Hanbury exhibited a specimen of *Leucania vitellina*, taken at Brockenhurst on August 24th, 1893, by Mrs. Hanbury, and another taken by himself at Freshwater, Isle of Wight, on September 7th; also an extraordinary *Gonepteryx rhamni*, showing red blotches at the tips of the fore wings, taken by a gardener at Walthamstow, Essex. Mr. C. G. Barrett exhibited a gynandrous *Argynnis paphia* recently taken in the New Forest by Mr. Cardew. Mr. J. M. Adye exhibited a specimen of *Deilophila livornica* recently caught at Christchurch, Hants. Mr. Elwes exhibited and described two species of the genus *Æneis* (*Chionobas*, Bdv.), *Æ. beani* and *Æ. alberta*, from North America, which had not been previously described, and stated that he had prepared, with Mr. Edwards's assistance, a revision of this very difficult genus, which would be read at the November meeting. Mr. Osbert Salvin communicated a paper entitled "Description of a new genus and species (*Baronia brevicornis*) of *Papilionidæ* from Mexico," and exhibited both sexes. Dr. Sharp read a paper entitled "On the Cost and Value of Insect Collections." Mr. W. F. H. Blandford, Mr. McLachlan, Mr. Jacoby, Mr. Waterhouse, and the President took part in the discussion which ensued. Professor Auguste Forel communicated a paper entitled "Formicides de l'Antille St. Vincent, récoltées par Mons. H. H. Smith." Mr. W. F. H. Blandford read a paper entitled "Description of a New Subfamily of the *Scolytidæ*." The President, Mr. Jacoby, and Mr. Waterhouse took part in the discussion which ensued.

October 18th.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Professor C. H. Tyler Townsend, of the Institute of Jamaica, Kingston, Jamaica, was elected a Fellow of the Society. Mr. R. Adkin exhibited two *Leucania vitellina* and one *L. extranea*, taken by Mr. B. W. Adkin in the Scilly Islands, in August, 1893. Mr. R. South exhibited a specimen of *Polyommatus bæticus*, and a number of varieties of *Chrysophanus phlæas*, captured in Kent, in September last, by Mr. Sabine; also a curious variety of *Argynnis euphrosyne*, taken in Lancashire in May, 1893, by Mr. T. Baynes; a pallid variety of *Vanessa urticæ*, taken by Mr. W. E. Cox in Monmouthshire, in July, 1893; and a *Triphæna pronuba*, the right wings of which were typical, and the left wings resembled the variety *innuba*, caught at sugar, in Dovedale, Derbyshire, by Mr. Blagg, in July, 1893. Mr. G. H. Verrall exhibited a specimen of the Tsetse (*Glossina morsitans*), and also one of the common European allied species (*Stomoxys calcitrans*). He also exhibited a specimen of *Hæmatobia serrata*, Dsv., which he stated was not uncommon on cattle in England, but believed to be harmless; while in North America the dreaded "horn-fly" is said to be the same species. Mr. Elwes exhibited a larva which he had found three days previously under stones on a moraine, apparently quite destitute of vegetation, in the Austrian Tyrol, at an elevation of about 7000 ft. He remarked on the number of Alpine butterflies, some of them in fresh

condition, which he had seen whilst chamois-hunting in the Tyrol during the last week, and he suggested that in such a fine autumn as the present one collectors might find more novelties among the larvæ of Alpine species than in the summer. Colonel Swinhoe read a paper entitled "A list of the Lepidoptera of the Khasia Hills" (Pt. 2). Mr. Elwes said he thought all entomologists would be grateful to Colonel Swinhoe, Mr. Hampson, Mr. Meyrick and others, for the work they had recently been doing in describing the moths of India; but as the district of the Khasia Hills was probably richer in species than any other part of India, except Sikkim, and new species were being received almost daily, it was impossible to make any list complete. Mr. Jacoby, Mr. McLachlan, Mr. Jenner Weir, and Colonel Swinhoe continued the discussion. Mr. E. Meyrick communicated a paper entitled "On a Collection of Lepidoptera from Upper Burma." The author stated that the species enumerated in the paper were collected by Surgeon-Captain Manders whilst on active service in the Shan States and their neighbourhood, shortly after the British annexation of the territory. A discussion followed, in which the President, Surgeon-Captain Manders, and Colonel Swinhoe took part.—H. Goss, *Hon. Secretary.*

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*September 28th, 1893.*—Mr. J. Jenner Weir, F L.S., President, in the chair. Mr. South exhibited, on behalf of Mr. Sabine, an example of *Lycæna bætica*, L.; some fine varieties of *Polyommatus phlæas*, L., from Dartford, one being intermediate between the type and the var. *schmidtii*, some of the others being rather curiously marked on the under surface. Mr. Frohawk exhibited two boxes of *Polyommatus phlæas*, L., from Balham, &c., showing great variation in size and markings, two approaching the var. *schmidtii*, and two without copper bands on the secondaries; also a living pupa of *Argynnis paphia*, L., and a nearly full-grown larva of *Argynnis adippe*, L., these two latter exhibits being a result of the phenomenally fine and hot weather. Mr. Jäger showed six specimens of *Lycæna arion*, L., captured by Mr. Bignell in Cornwall last June. Mr. Fenn exhibited a series of *Dasyampa rubiginea*, Fb., bred Sept. 1893, from Devonshire; also long and variable series of *Acidalia aversata*, L., *Acronycta rumicis*, L., and interesting varieties of other species. Mr. J. H. Carpenter exhibited a second brood of *Argynnis euphrosyne*, L., the larvæ, after apparently commencing to hibernate, having rapidly fed up during August. Mr. R. Adkin exhibited a series of *Cymatophora duplaris*, L., taken in Sutherlandshire, they being very dark compared to the southern forms. A paper by Mr. Hawes was then read, "On the unusual abundance of *Polyommatus phlæas* in 1893," in which he reviewed the early appearance of this species in April, and its gradual numerical increase during the succeeding months, also noting some interesting points in its life-history, the paper being illustrated by the exhibition of two plants of *Rumex acetosa*, having thereon a number of ova laid in a state of nature, and a few recently-hatched larvæ.

*October 12th.*—The President in the chair. Mr. J. H. Carpenter exhibited long series of the white-spotted forms of *Argynnis paphia*, L., and a small form of the same species, all from the New Forest, Mr. Tutt remarking that this white-spotted form was frequently tinted with green, as in var. *valezina*, more especially the females. Mr. Frohawk exhibited



examples of *Vanessa cardui*, L., *V. atalanta*, L., *V. polychloros*, L., &c., being the largest he had bred and the smallest captured, the difference being very considerable. Mr. Barrett exhibited a gynandrous specimen of *Argynnis paphia*, L., taken in the New Forest, the left fore wing and about one-third of the left hind wing male, the remainder female; also, amongst others, the two broods of *Vanessa levana*, L., and *V. c-album*, L., lent by Mr. Merrifield, of Brighton, showing the seasonal dimorphism produced from the same batch of ova by means of artificial warmth and cold. Mr. South exhibited a specimen of *Orthotania antiquana*, Hb., taken on 28th June, 1893, on a shop window in St. John's Wood; also long series of *Pyrausta purpuralis*, L., and *P. ostrinalis*, Hb., which he considered to be phytophagous forms of one species, many that he showed being intermediate and referable to either; a long discussion followed. Mr. B. W. Adkin, *Leucania vitellina*, Hb., and *L. extranea*, from the Scilly Isles. Mr. Auld, a specimen of *Vanessa atalanta*, L., having an orange band on one hind wing, and red on the other. Mr. Briggs, a bright blue female *Lycana bellargus*, Rott. Mr. Dennis exhibited examples of a partial third brood of *Pararge megæra*, L. Mr. Turner showed three specimens of the Scotch form of *Arctia menthastri*, Esp. Mr. Adye, a specimen of *Deilephila livornica*, Esp., captured at Christchurch, 25th May, 1893. Mr. McArthur, a second brood of *Boarmia repandata*, L., from the South of Ireland. Mr. Jenner Weir exhibited specimens of the Tsetse Fly (*Glossina morsitans*), received from Dr. Percy Rendall, in the Transvaal; also a specimen of a *Depressaria*, taken by him more than thirty years ago near Lewes, probably *D. aurantiella*, Tutt, which differed from *D. badiella*, Hb., in possessing bright orange coloured palpi, these in the latter species being dark brown. Mr. Robert Adkin exhibited a series of *Cymatophora or*, Hb., bred from larvæ found feeding between united leaves of aspen in Sutherlandshire, together with representatives of the South English, Shetland, and Rannoch forms for comparison, calling attention to the variation existing between them. Mr. T. R. Billups exhibited a number of species of rare Diptera, taken at Oxshott and Dulwich, including, amongst others, *Helomyza pallida*, Fb., *Sciomyza dubia*, Mg., &c. Mr. C. Oldham exhibited *Xanthia circellaris*, Hufn., *X. gilvago*, Esp., *Anchocelis lunosa*, Haw., *A. litura*, &c., from Essex, Cambridgeshire, and Norfolk.—H. WILLIAMS, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 9th.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. The Rev. R. Freeman, 6, Station Road, Prescott, was elected a member of the Society. Dr. J. W. Ellis read an interesting letter from a correspondent in Grahamstown, South Africa, giving descriptions of the habits of some species of Coleoptera from that district, and an exciting account of a fight between two large specimens of *Circellium bacchus*. Dr. Ellis showed a large number of species illustrative of the letter he had received. Mr. Crabtree, *Hydrelia unca* from Ulverston; and *Arctia lubricipeda*, var. *radiata*. Mr. Scott, on behalf of Mr. H. S. Clark, of Douglas, a number of Lepidoptera from the Isle of Man. Mr. Gregson, fine series of *Abraxas grossulariata*, and banded forms of *Vanessa urticae*, bred by him this year. The President, a grand series of *Boarmia roboraria*, including a pair of black forms from Coventry. Mr. Jones, a variable series of *Bombyx trifolii*. Mr. Sharp, examples of melanic Coleoptera, which he stated had been unusually plentiful this year, and that this fact went against the theory of damp



producing melanism. Mr. Harker, a specimen of *Dasypolia templi*, captured in the heart of Liverpool.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*September 18th, 1893.*—Mr. R. C. Bradley in the chair. The following were exhibited:—By Mr. W. Harrison, a nest of *Bombus lapidarius*, from which he had bred males, females, and workers. By Mr. G. W. Wynn, a specimen of *Vanessa urtica*, in which the usual yellow markings were replaced by white ones; the space between the black markings on the costa, and other parts of the ground colour, were also replaced by white. By Mr. R. C. Bradley, a small collection of Lepidoptera made at Weymouth this year, and including *Sesia ichneumoniformis*. By Mr. P. W. Abbott, a number of Noctuæ, taken at Sutton this year, including *Agrotis obelisca* and *Xanthia gilvago*, both new to the district. Mr. C. J. Wainwright read a paper on the local list of Lepidoptera, which he had written mainly in order to attract attention to those groups least represented in the list, in order that blanks might be filled up.

*October 16th.*—Mr. R. C. Bradley in the chair. Mr. G. W. Wynn showed some large Bombycidæ from N. America; also a few other insects, including *Hadena genistæ*, from Wyre Forest. Mr. R. C. Bradley read a paper describing the Society's excursion to the Cotswolds last Whitsuntide; he showed a number of his captures; and Messrs. A. H. Martineau, H. J. Sands, and C. J. Wainwright also showed theirs. The Diptera, Hymenoptera, and Lepidoptera were all well represented, the best captures being among the Diptera.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

NOTTINGHAM ENTOMOLOGICAL SOCIETY.—The annual meeting of this Society was held on October 2nd, in the Society's rooms, Morley House. The President, Mr. Pike, gave a short account of the past year's progress, and the business of the night began. Some few trifling alterations were made in the rules, and it was decided to ask some of the local entomologists to give the dates on which they could deliver papers. The election of officers for the ensuing year was then proceeded with, Mr. W. Allen kindly consenting to act as President; Vice-President, Mr. Pike; Treasurer, Mr. W. F. Smith; Secretary, Mr. Whitehall; Committee, Messrs. Richards, Harrison, Clarke and Marshall. A hearty vote of thanks was accorded to the retiring officers.—C. WHITEHALL, *Hon. Sec.*

ENTOMOLOGICAL CLUB.—*June 2nd, 1893.*—A meeting was held at Loanda, Beulah Hill, Norwood. Mr. S. Stevens in the chair. *October 5th.*—A meeting was held at Wellfield, Lingard's Road, Lewisham. Mr. R. Adkin in the chair. Among the exhibits were *Epinephele ianira*, *Leucania vitellina* and *L. extranea* from the Scilly Isles; *Acidalia humulata* from the Isle of Wight; *Boarmia repandata* bred August, 1893, from ova received from Glengarriff, Ireland, in the spring; also a collection of Lepidoptera from the last-named locality.—RICHARD SOUTH, *Hon. Sec.*

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## THE COLOURING OF *CHRYSOPHANUS PHLÆAS* AS AFFECTED BY TEMPERATURE.

By F. MERRIFIELD, F.E.S.

I HAVE read with the interest that always attaches to Mr. Frohawk's contributions to entomological knowledge, his notes on this subject in the 'Entomologist' (*ante*, p. 294). I do not doubt that his personal observations are accurate, but think I can show that his notes, which he regards as "to a great extent adverse to Mr. Merrifield's views on the effects of temperature on the colouring of *C. phlæas* (Trans. Ent. Soc. 1893, Pt. I., p. 62)," are in fact entirely consistent with my recorded experimental results. It would be extraordinary to me if they were not so, for temperature *per se* must produce the same effects in a field as in a room, though in the open country it may often be difficult, and sometimes impossible, to prove or trace those results, because the means of observation there are necessarily so inferior in precision. My experimental results are not, in my opinion, capable of any other explanation than that an average temperature of from 80° to 90° during the pupal period, or the sensitive part of it, caused those appearances in the general colouring of *C. phlæas* which Mr. Frohawk correctly summarises in the words, "the copper-colouring dull and the black markings pale." Mr. Frohawk describes his specimens, captured on the 5th and 6th of September last, as of bright copper-colour with the black deep, and, as he assumes that their pupal period was passed while a high temperature prevailed, he infers that, if my views were correct, his captures ought to have corresponded with my high temperature forms. To establish the conclusion thus arrived at, it would be necessary to show that the "high temperature" to which the pupæ of Mr. Frohawk's captures were exposed was *as high as*

temperature as that which I found necessary to produce my high temperature forms, that is,  $80^{\circ}$  or upwards; and it is here that the argument fails. Mr. Frohawk says, "Considering the vast numbers I saw on the same piece of ground at the same time, all having evidently been bred close by, they must necessarily all have been subjected to high temperatures during their various stages, and especially while in the pupa, as the temperature, both day and night, remained so high for weeks previous to and at the time of emergence; many were in rich condition, having evidently only just emerged." As it is a question of "my views," I need not concern myself about the stages anterior to the pupal stage, because my views, as recorded, are that it is in the pupal stage, and more especially in a rather late portion of it, that the general colouring of *C. phlœas* is affected by temperature. It is quite true that the summer was a remarkably hot one, but a conclusion that therefore the summer pupæ of 1893 were exposed for all or even the greater part of their pupal existence to a temperature averaging  $80^{\circ}$  to  $90^{\circ}$  would be quite an erroneous one, as I proceed to show. It is to be inferred, from the passage I have quoted, that the specimens captured on the 5th and 6th September,—at all events those of such quality that they were preserved—were mostly fresh specimens, *i. e.*, had but recently emerged. According to my recorded experiments, the temperature from the 5th September, back for about twenty-two days, would cover the whole period that the captures were in pupa. I reject the 4th and 5th September, because I have found the general colouring practically fixed before the last day or two of the pupal period; this leaves twenty days, counting back from the 3rd September, of which about the last twelve would, according to experiment, cover the most sensitive period. It may surprise those who are not in the habit of comparing their general impressions of a warm period with a thermometric record to learn that, during the twenty days referred to, the average of the mean daily temperature in the south-east of England was *less than*  $65^{\circ}$ ; and that during the critical twelve days it was *only about*  $60^{\circ}$ . I do not know exactly where the captures were made, but assume they were in North Surrey, near suburban London. I have therefore not limited myself to the sea-coast temperature of my own residence, Brighton, but have also obtained that of the Kew Observatory, and through the kindness of friends have been supplied with other local records of the periods in question, from the 15th to the 22nd August, and from the 23rd August to the 3rd September. They work out as follows (see opposite).

Mr. G. von U. Searle, who kindly supplied me with the West Kensington figures, explained that for local reasons his figures would be rather higher than those for the open country; and Mr. Oswald Latter, who kindly furnished me with the



Godalming figures, mentioned that for local reasons his figures would be somewhat lower than the average. Allowing for these explanations, we may safely take the average temperature of Mr. Frohawk's captures at about  $64^{\circ}$  for their whole pupal period, and  $60^{\circ}$  for the more critical period of twelve days.

	(1.) Own.	(2.) Brighton municipal (Dr. Newsholme).	(3.) Kew Observatory.	(4.) West Kensington.	(5.) Godalming, N.W. Surrey.
The 8 days	(not kept)	68.10	70.21	72.23	67.4
The 12 days	59.8	62.2	59.85	60.60	58.7
The 20 days		64.55	64.00	65.25	62.19

Here I might perhaps have let the matter rest had my object been merely a controversial one, instead of being, as it is, that of throwing as much light as possible upon the question. I go on therefore to invite attention to the fact that the mean daily temperature may be several degrees less than the average of the actual temperature to which an object is exposed when there is much sunshine. It is, I believe, quite impossible to say, with any approach to accuracy, *how* much should be added for sunshine, as this would depend on the amount of sunshine, aspect, soil, wind, humidity, surroundings of the object, and perhaps other considerations. But from enquiry made of competent authority I believe meteorologists would not put it, for either of the periods in question, and certainly not for the latter period of twelve days, and for objects circumstanced as the pupæ of *C. phlæas* are, at so much as five degrees. Few pupæ are exposed to full sunshine, and I believe that the pupa of *C. phlæas* is to be found attached to the stems and under sides of the leaves, near the ground, of sorrel and other field-plants. In captivity, though a few of mine pupated close to the muslin cover of the glass cylinder in which the larvæ were kept, the great majority crept to the bottom. As to sunshine I have made enquiry, and find the important period was not a remarkably sunny one. At Brighton, which being on the south coast is particularly sunny, the daily average was, for the 20 days, 8.01 hours; for the last 12 days, 7.10 hours. At Kew it was, for the 20 days, 6.94 hours; for the last 12 days, 5.5 hours. Allowing even as much as 5 degrees for sunshine, we should have:—

For the whole 20 days, a temperature of  $69^{\circ}$

For the last 12 days                   "                   "                   "  $65^{\circ}$

neither figure approaching my "high temperature" of  $80^{\circ}$  and upwards.

At these temperatures it was therefore to be expected that the captures of the 5th and 6th September would *not* correspond with my "high temperature forms at 80° to 90°, but *would* correspond more nearly with some of my lower temperature forms, those, for example, of the class at about 70°, or those "at about 56° to 58°." And this I gather from Mr. Frohawk's description of them is what they do. His description is as follows:—"All that I examined were of brilliant colouring, the copper being rich and bright, and the black deep; in most cases they resembled Mr. Merrifield's low temperature forms." For comparison with this, I will give my description of the general colouring of some of my "low temperature" forms. Of those at a temperature averaging about 70° I say (p. 63), "these are *noticeably different* [*i. e.*, from the duskier ones at 80° or upwards], the colours are more intense, the dark parts blacker, the coppery parts more vivid." The other classes (at about 58° and 56° respectively), are described by me as showing but "a slight further increase [*i. e.*, as compared with those at 70°] in the brightness of the coppery parts." Mr. Frohawk does not say which of my lower temperature forms his captures most resembled; nor indeed do I gather that they have been compared side by side with mine, which are at present deposited at the British (Natural History) Museum, a comparison which should certainly be made to ensure accuracy; and even then it should be borne in mind that out of the hundreds captured it is probably the brightest of their sort that would have been preserved, whereas the whole of mine were preserved and exhibited. But I think I shall be right in assuming that Mr. Frohawk does not mean that his resembled my *lowest* temperature forms (*i. e.*, 47° and under), for these are especially remarkable for (1) the breadth of the copper band on the hind wings, and (2) the fact that the coppery scales are often prolonged along the nervures from the band towards the bases of the wings, whereas Mr. Frohawk does not mention a broad band as any characteristic feature, and speaks of the second feature as having been found on only one of his hundreds of captures.

I have admitted, and do most fully contend for, the impossibility of saying, with any near approach to accuracy, to what temperature the pupæ of the captured *C. phlæas* were exposed. But that is a reason for *not* assuming that their appearance is contradictory to my conclusions from experiments where the exact temperature can be ascertained. And before accepting the view that they are thus contradictory,—a view grounded on observations in the open field, where the conditions for exactness do not exist,—I think it would have to be shown how the results obtained by me under circumstances admitting of exact observation are to be explained.

Besides, there is in this case another formidable fact to be



explained; and that is that one of the most distinguished of living biologists has simultaneously arrived at results similar to mine, with the same insect. His experiments indeed have been more comprehensive than mine, for he has tried them both on the dark form of Southern Europe and on the ordinary form of Central Europe. I refer to Prof. Weismann who, in his work, 'The Germ Plasm,' published in May last, describes the results of his experiments as follows:—"Caterpillars were raised from the eggs of the German form of *C. phlæas*, and the pupæ were then exposed to a much higher temperature till the emergence of the butterfly. The result was that many of the butterflies were slightly dusted with black, but none of them resembled the darkest forms of the southern variety *eleus*. I then made the contrary experiment, by subjecting caterpillars which had just entered the pupal stage, and had been raised from the spring generation of the Neapolitan form, to a very low temperature. Many butterflies were thus obtained which were not so black as those which had emerged from pupæ kept at a higher temperature." Prof. Weismann adds that "both experiments prove the correctness of the old assumption of lepidopterists, that the action of heat on a single generation is capable of giving the German form a blackish tint"; so that the results now established by experiment appear to be in accordance with the previous opinion among Continental lepidopterists. I mention this, not as attaching cardinal importance to prevailing impressions where means exist, but have not been taken, to subject them to exact investigation, but as perhaps not without interest to English lepidopterists, some of whom are, I believe, under a different impression, perhaps accounted for by the fact that in England the summer temperature, being considerably below that of Central Europe, is not high enough to bring out the duskier colouring. I think I may say, in conclusion, that unless something admitting of greater accuracy than field observations do, is brought to bear on this matter, the conclusions arrived at by actual experiment, in Germany and England, must be considered as established. I have gone into the matter rather more fully than was necessary for the immediate purpose of my communication, because it seemed to me that it might be made an opportunity for directing attention and observation to a subject of much wider interest, *viz.*, the means for correlating the results of observation in the laboratory with those of observation under natural conditions. The chief interest of the former is perhaps their bearing on the latter; but to compare them effectually, the essential limitations proper to each of the two kinds of observation have to be recognised.

Brighton, 5th November, 1893.



OBSERVATIONS ON *VANESSA C-ALBUM*.

By W. HARCOURT BATH.

IN reading up the bibliography of this interesting insect, one cannot help being much struck with the diversity of ideas which appears to prevail among entomologists concerning its economy.

Having personally acquired a considerable acquaintance with it in its west-midland haunts, I will therefore venture to vent my own views respecting several points about which there is apparently a great variety of opinion. The most important is that relating to its dimorphic tendencies, concerning which I will first of all give, in a condensed form, what has already been written:—

1st. Edward Newman, in his 'British Butterflies,' pp. 48–49, observes: "There are three very constant varieties observable in the colouring of the under side . . . . the characteristics of which may be described as repletion, variety, and depletion: in the first, the brown is dark, dull, and uniform; in the second, it is richly varied with different shades of brown and metallic green; in the third, the colour seems partially bleached, and assumes a tinge of fulvous yellow. Mr. Dale . . . regards the first and third of these as a first and second brood. . . . Mrs. Hutchinson, of Leominster, who is perhaps better acquainted with this butterfly than any other entomologist in the United Kingdom, considers the uniformly dark brown specimens to be females, and the rich varied specimens to be males. Accepting these views as correct, there still remains a little difficulty in the extreme uniformity of colouring in all the fulvous or vernal specimens; these are certainly not all of one sex."

2ndly. Mr. Robt. Adkin, in the 'Entomologist' for November, 1892 (vol. xxv., p. 318), related his experiences in rearing this butterfly under the heading of the "Autumn form of *Vanessa c-album* bred from spring larvæ," wherein he remarks: "Cases of one brood of a seasonal dimorphic species assuming the form of the other brood under artificial conditions, are of by no means uncommon occurrence; but obviously similar cases occurring under natural conditions are not so easily traceable. . . . *Vanessa c-album* affords a good example of such a species, the two emergences being easily separable, the chief point of difference being in the coloration of the under side, which in the earlier brood is of a pale ochreous tint, while that of the latter brood is dark greyish brown."

3rdly. Humphreys, in his 'British Butterflies,' p. 50, says:—"There are two broods in the year; the first appearing in June, and the second in August and September. The latter brood are said to be of a paler colour than the summer ones."

4thly. Dr. H. C. Lang, in his grand work on the 'European Rhopalocera,' p. 170, writes about its dimorphic tendencies as

follows: "This species exhibits seasonal dimorphism, the vernal form having the under side light brown, almost as pale as *Vanessa egea*, while the æstival form is richly variegated on the under side of the male, and very dark brown in the female." In the work in question, upon plate xxxix. are given two good figures of the under sides of the males of the "spring and summer broods," showing the difference in the colouring.

Now, in the preceding accounts it will be observed that great diversity of opinion prevails upon many important details; but, first of all, lest it may lead to a little confusion, it may be well to point out that what is meant for the æstival or summer emergence is often expressed as the vernal or spring brood, while the autumnal emergence is sometimes erroneously denominated the æstival brood. The terms summer and autumn should undoubtedly be employed (in the case of this butterfly) in preference to those of spring and summer, whenever the first and second emergences are expressed in that manner, as nothing but hybernated specimens are ever to be met with in the vernal months, the first brood appearing, according to my own observations, never before the middle of June, while the second one always occurs in the months of September and October; at least this is the case in the midlands. Well, as far as my experience goes, the types of the first and second broods occurring in this country do not exhibit any appreciable difference, either in the shape of the wings or in the colour of the upper or under sides. The only feature worth noticing is that the ground colour of the upper surface of the wings of the first brood is of a slightly lighter hue than that of the second emergence; it is thus somewhat intermediate in this respect between the type of the autumnal brood and the form about to be dealt with, namely, the "depletion" variety of Newman. This latter is a very distinctive one, and occurs only with the summer or first brood. It is of a very pale colour on the upper surface of the wings, the under sides also being fulvous yellow. This form is very faithfully depicted in Dr. Lang's work previously referred to, and is inferred by that author to be the type of the first generation on the Continent. My own experiences of collecting on the other side of the English Channel have, hitherto, been too limited to permit of my arriving at any conclusion, either in confirmation or otherwise, of what that author states to be the case in the larger area.\* I should think, however, it was highly probable that the fulvous form was the type of the first brood in Southern and Central Europe only, and that the one occurring as the types of the first and second broods in this country as the typical form of the same brood found in the more northern parts of its area of distribution, that is in similar latitudes to our own. The fulvous form I therefore consider

\* I have taken this fulvous form in Switzerland in July and August, but none of the other form with which it occurs as the type of the first brood in England.



occurs in this country, only as an aberration of the first brood. I have bred it with typical forms of the first brood, and several times have also taken it upon the wing with the type in the months of July and August; but, according to my experience, it is by no means plentiful, only appearing in the proportion of about one to ten of the type. I have never known it to occur with the later emergence, so that Humphreys and Dale (quoted by Newman) are both evidently incorrect, when they assert that it is the form of the second brood; and so also is Mr. Adkin, in assuming that it is the type of the first emergence in this country. This form can be readily distinguished from the typical one with which it occurs, not only by the distinctive colouring of the under side, but by a mere glance at the upper surface as well, for it is slightly larger in size, much less angular in shape, and a good deal lighter, both in the ground colour and in the markings.

A very similar form occurs, under somewhat parallel conditions, in the case of *Pararge egeria* upon the Continent, besides many other species too numerous to mention; but I do not think it is generally known that *Vanessa urticae* possesses a similar lighter coloured form (as far as the upper surfaces of the wings are concerned) in this country with the first brood. If Weismann's theory is correct, namely, that the great majority of the European *Rhopalocera* owe their origin to more northern latitudes, the dark form constituting the type would probably be the original stirps from which the fulvous form, as well as the closely-allied *Vanessa egea*, originated in more southern climes, and the fulvous form would possibly be the connecting-link between the two species. The sexes, in the case of both broods, may be easily distinguished from each other, concerning which I can endorse the opinion of Mrs. Hutchinson (quoted by Newman). The female is also, on the average, larger than the male, and the shape of its wings is less angular than the latter sex.

Having fully discussed the dimorphic tendencies of this species, I will now deal with a few other points concerning its economy, about which there still lingers a little doubt. I believe it is now generally understood to be double-brooded in this country every year, although Newman considers, in his well-known work, that this is a "mistake," as he had "been able to obtain no satisfactory evidence of any caterpillar prior to those so abundant in the autumn months about the season of hop-picking." Now it seems rather strange that he should have written thus, considering that he had such abundant opportunities for observing the habits of this butterfly in Herefordshire, where he resided for a number of years; for I have myself found the larvæ as early as the end of June. The larvæ of the second brood occur in September, and I have reared the imagos from them so late as the last week in October.



The first brood is, however, I consider, always less numerous than the second one. This season the autumn flight has been exceedingly plentiful in the west midlands; and in one of its south Shropshire haunts I have captured as many as twenty specimens in the course of a couple of hours, though as a rule not more than from two to four specimens are upon the average seen in a single day. It has likewise been very abundant in several Worcestershire localities, visited by myself this autumn.

Now for a word or two respecting the larva, concerning which my experiences differ from those of Humphreys, who says, on p. 50 of his valuable work, that "the larva is not gregarious"; for wherever I have found the caterpillar I may always expect to obtain some more within a foot or two of the spot. It feeds in small companies of from three to a dozen individuals, about half a dozen being the average number, and I have always found them upon the stinging-nettle in the localities where I usually look for them; never upon hop or any other plant; so that it seems strange why the butterfly should be so circumscribed in its distribution.

This circumstance reminds me that I have a few lines to pen relating to its geographical distribution in the British Isles. Its head-quarters in South Britain appear to be the west midland counties of England (especially in Worcestershire and Herefordshire), as well as in the adjoining eastern counties of the little principality. Outside this area it appears to be generally scarce, and very uncertain in its appearance; and it is strange that this should be so in Kent, where hops are very extensively cultivated.

In Scotland it appears to be only a very rare visitor; some authors, indeed, assert that it is unknown there altogether. Dr. Lang, for instance, p. 170, says that it is "altogether absent from Scotland"; while Newman, p. 50, observes that he has "no knowledge of a Scotch specimen." Humphreys, however, p. 50, gives Fifeshire as a locality for it in North Britain. Has any reader any recent record of its occurrence in the Northern Kingdom?

In Ireland this butterfly is also very rarely observed, though possibly it may be more frequent there than is generally supposed to be the case. May I ask why Mr. W. F. de V. Kane does not include this species in his "Catalogue," in the face of what Newman says respecting its occurrence in the sister Isle?

The flight of this elegant species is very swift, and it requires one to be very quick to enable him to secure it.

It is principally to be found in open spots in woods, or sailing along hedgerows. It is very fond of settling upon brown leaves, with its wings open, being perfectly conscious of its close resemblance to them in colour; but whenever it settles upon a tree-trunk or a gate-post, which it also possesses a great predilection for, it immediately closes its organs of locomotion,

knowing full well its wonderful mimetic resemblance to the dark brown bark or wood when in this condition, and it really requires a very practised eye to detect it.

195, Ladywood Road, Birmingham.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 318.)

### BOMBYCES.

#### NYCTEOLIDÆ.

*SARROTHRIPUS UNDULANUS*, *Hb.*—I have taken this insect not unfrequently at Killarney; also near Favour Royal, Tyrone, and at Killynon, Westmeath. Co. Galway (*R. E. D.*); at Caragh L., Kerry (*Dr. B.*); Limerick (*S.*). The *v. degenerana* occurs at the first two localities above named.

*HYLOPHILA PRASINANA*, *L.*—Occurs in all parts of Ireland that I have visited. Derry (*W. E. H.* and *C.*), where I have seen the larvæ very abundant; Monaghan, Tyrone, Cavan, Westmeath, Galway; and in Cork, Limerick (*N.*), and Kerry. The larvæ suffer much from ichneumons.

#### NOLIDÆ.

*NOLA CONFUSALIS*, *H.-S.*—Very widely spread, but usually occurs singly. One at Derry (*C.*), Do. (*W. E. H.*); numerous at Donard Lodge, Co. Down (*Bw.*); Armagh (*J.*); Favour Royal, Tyrone; Drumreask, Monaghan; L. Gill, and Knocknarea (*Russ*), Sligo; Banagher, Kings Co.; Killynon (*Miss R.*); one at Kings-town, the Phoenix Park, and Malahide, Co. Dublin; several at Powerscourt, Co. Wicklow, and Wicklow (*C. G. B.*); Howth (*B.*); one at Dunmore, Co. Waterford; Killarney; near Crossmolina, Mayo (*S. R. F.*).

#### LITHOSIIDÆ.

*NUDARIA MUNDANA*, *L.*—Common, and generally very abundant, but somewhat local. Innishowen (*W. E. H.*) and Ardara (*J.*), Co. Donegal; near Belfast often met with, but not common (*W.*); Carlingford and Bundoran (*J.*); Cromlyn, Westmeath (*Mrs. B.*); near Galway, abundant (*A.*), and Moycullen; Knocknarea (*Russ*) and Lissadell, Co. Sligo; Glandore (*D.*) and Crookhaven, Co. Cork; Mucross, Ballyvourne, and Kenmare, Co. Kerry; &c.

*SETINA IRRORELLA*, *Clerck.*—Common on the coast (*B.*). I have only heard of its occurrence on the coast of Clare (*Br.*), Mayo, and near Galway (*A.*).

*CALLIGENIA MINIATA*, *Forst.*—Near Claring Bridge (*B.*), and occasional in East Galway (*R. E. D.*).

*LITHOSIA SORORCULA*, *Hufn.*—"Abundant in Killarney" (*B.*).

*LITHOSIA LURIDEOLA*, *Zinck.*—Mr. Birchall records having met with it frequently, but it is possible that he may have been in error. Common near Galway (*A.*). I have never seen an Irish specimen, except those of Mr. Allen, who reports the larvæ were found feeding on bramble.

*LITHOSIA COMPLANA*, *L.*—It is curious that I have found this species widely distributed, and not uncommon where it occurs. It is possible that Mr. Birchall, who only noted its occurrence at Howth in a supplementary list, may have at first mistaken it for the former species. Co. Down (*Bw.*). I have taken it not uncommonly at Howth, on the Wexford and Waterford coasts, Minehead, &c.; and one at Dursey Island, the extreme S.W. point of Kerry.

*LITHOSIA CANIOLA* (*Hb.*).—"Discovered by Mr. Barrett, in 1860, on the Hill of Howth. It was abundant, but extremely local" (*B.*). Mr. Birchall, in company with Mr. Cooke, took it plentifully in flight in August at dusk, and attracted it by sugar, and took a long series of males by a bred female. He also found the larvæ feeding on the flowers of *Lotus corniculatus*. The colony flourished at Howth for many years, and Mr. Sinclair once took a considerable number of them at the same spot, but subsequently failed in meeting with either the larvæ or imagines, and came to the conclusion that this rare species perished in the severe winters of 1878 or 1879; and it has been frequently since searched for in vain. Professor G. V. Hart, a year or two ago, took a very worn *Lithosia*, possibly *complanata*, but which by the pallor of its hind wings may have belonged to this species. The only other Irish record is its reported capture by Mr. Warren Wright at Tramore, Co. Waterford, *Entom.*, 1866, p. 152.

*GNOPHRIA QUADRA*, *L.*—A specimen taken in a spider's web by Mr. W. Talbot at Ashford, Co. Wicklow, July, 1877 (*Entom.* xi. p. 70). Limerick (*B., in litt.*). A specimen was sent me from New Ross, in the Co. Waterford (*B.-H.*).

*GNOPHRIA RUBRICOLLIS*, *L.*—Widely spread throughout the southern half and west; Co. Dublin, Malahide Castle demesne, Dundrum (*Bw.*), and Rathfarnham (*Greene*); near Waterford (*B.-H.*) and Kilsheelan (*J. C. Baker*); Castletown Bere (*Car-penter*), and Kenmare, Co. Kerry (*Miss V.*); Co. Galway (*R. E. D.*), and near the town (*A.*).

#### EUCHELIIDÆ.

*DEIOPEIA PULCHELLA*, *L.*—One specimen taken by Mr. R. J. Ussher, at Ardmore, on the sea-coast of Waterford, Sept. 1880, who presented it to the National Museum. One at Bandon (*D.*).



*EUCHELIA JACOBÆÆ*, *L.*—Everywhere abundant, and often defoliates the ragwort to the advantage of the farmer.

### *CHELONIIDÆ.*

*NEMEOPHILA RUSSULA*, *L.*—Widely spread, but local. Abundant in the bogs about Dinis, Killarney, and about Castletown Bere (*Carpenter*); Co. Galway, Ballynahinch, abundant, Leenane, Delphi, and Mweelrea Mt. (*H. Hart*); Sligo and Markree Castle; near Carrick, Co. Donegal.

*NEMEOPHILA PLANTAGINIS*, *L.*—Found on all the heaths and bogs that I have visited, and the larvæ very common. Killarney, McGillicuddy's Reeks, in Co. Galway and Connemara, Westmeath and Tyrone; about Derry not common (*C.*); L. Gill, Sligo; Belmore Mt., Fermanagh; Toberdaly, Kings Co. Dark varieties occasionally occur.

*ARCTIA CAIA*, *L.*—Everywhere common. I know of no topomorphic varieties.

*SPILOSOMA FULIGINOSA*, *L.*—Very widely distributed, and occasionally locally common. Innishowen, Co. Donegal (*W. E. H.*); Co. Derry, Magilligan, very abundant (*C.*); Co. Antrim, Ballycastle (*R. C.*); Westmeath, Cromlyn (*Mrs. B.*), and Killynon (*Miss R.*); Sligo, Markree Castle; L. Arrow, Co. Roscommon (*Miss ff.*); Belmore Mt., Co. Fermanagh. Once I found an enormous colony on Keragh Island off the coast of Wexford; and, with a few imagines, there were also present quantities of both pupæ and larvæ at the same time. Bere I., Co. Kerry, &c. I have seen occasional specimens of the *v. borealis*, but not very dark ones. A variety from Galway (*R. E. D.*) has the red of the body, and fringe and inner margin of the hind wings, replaced by olive-yellow; the fore wings are a dingy olive, and the hind wings a smoky grey.

*SPILOSOMA MENDICA*, *Clerck.*—Inserted in Mr. Birchall's catalogue as Irish, on the authority of the Rev. J. Greene, but no localities were given. The first authentic specimen was taken at Finglas, Co. Dublin, by the late Mr. Sinclair. Subsequent captures are as follows:—Clondalkin, Co. Dublin (*Gr.*); Waterford (*J. C. Baker*); Cappagh, same county (*Miss V.*); Carriglas, Co. Cork (*L.*); Co. Galway (*R. E. D.*), one dark male. The last locality has furnished the ordinary dark form of the male, but the preceding records are of females, so that their type of male is as yet unascertained.

*Var. rustica*, *Hb.*—The first discovery of this remarkable dimorphic form in Ireland is attributable to Mr. C. Donovan, of Glandore, Co. Cork, and was identified by me in 1885, and added to my collection by the kindness of the captor. The tone is a pale buff. It was with no little interest, therefore, that the succeeding summer I received a letter from the Rev. James Bristow, of

Belfast, asking me to identify a similar, but almost white, specimen, which, with others, was taken at light by the Rev. J. Gordon Holmes, of Antrim; for these captures proved that the variety occurred as a local form, and was not a casual genetic aberration. In the same year, Mr. H. McDowell, of Passage West, Cork, took a male *v. rustica*; and, at a place thirty miles distant, a female, from the ova of which the results are given below. A varied series, bred from these by Mr. Robert Adkin, President of the South London Entomological and Natural History Society, were exhibited at one of their meetings, accompanied by a valuable paper, which is to be found in their 'Proceedings' of 1887. From another moiety, Mr. McDowell bred six males, three of which were particoloured, with the hind wing and central area of the fore wing of a smoky tint, while the costa and outer margin of the fore wing were cream-coloured. Mr. Johnson, at Armagh, has taken, with the cream-coloured form, another similar to that just described. The males (*supra*), bred by Mr. Adkin and Mrs. Hutchinson, of Leominster, varied from cream-colour to a pale smoky brown, the females generally being characterised by the usual spots being more or less obsolete. Mr. Adkin subsequently paired one of his Irish *v. rustica* with an English typical female, and the two males which resulted from the cross were of a buff colour, intermediate between the two forms, very similar to my Glandore specimen. In my correspondence with Mr. Adkin, to which he refers in the above paper, I was unable to verify the capture of any dark males in Ireland, but am now in a position to supplement my information as before stated. We find, therefore, the *v. rustica*, though occurring in the extreme north and south of Ireland, is not the universal form. It is to be hoped that additional facts may be gleaned as to its distribution. The late Fredk. Bond, of Staines, to whom I first communicated the discovery of the variety, informed me that he believed "a white male *mendica* was preserved in a Liverpool collection, and that Mr. Gregson, of Liverpool, had one of a cream-colour." Also *cf.* Mosley's "Illustrations." Cream-coloured females are preserved in Mr. Barrett's and Mr. Jenner Weir's cabinets; but in Yorkshire are to be found variations in the opposite direction. Mr. G. Rose, of Barnsley, has a dark male with the fore wings traversed by two darker shadings formed of suffused blotches; a central one from mid-costa to the inner margin, and another parallel one between it and the hind margin. Our knowledge of the variety *rustica* occurring on the European continent seems to be scanty. Staudinger, referring to Hübner's figure 150, adds: "*♂ colore albido?*" and gives as a locality, "*? Hung. or.*" The colour of the Irish form varies greatly in the male, but there seems to be no distinct character in the female, except perhaps a more than ordinary tendency to lose the spots normally present in the type.

(To be continued.)



## SPILOSOMA LUBRICIPEDA var. ZATIMA IN ENGLAND.

BY RICHARD SOUTH.

SINCE the publication of my remarks on *Spilosoma lubricipeda* var. *zatima* (*ante*, pp. 257-259), I have had considerable correspondence respecting the occurrence of the English equivalent of that form (i.e., var. *radiata*, Haw.) in Yorkshire. Mr. Porritt (*ante*, p. 296) has already shown that the form of *S. lubricipeda* referred to by himself, and probably also by Mr. Carrington, is not true *radiata*; and the general opinion among Yorkshire entomologists of the present day appears to be that the true *zatima* (= *radiata*) form was not known in their county until Mr. Harrison bred a female in 1891, from which he subsequently obtained a large stock of the variety in question. It was inferred that as Mr. Harrison's original female example of the variety was bred from a pupa received either from Grimsby or London, neither she nor her offspring could be considered as having any claim to be regarded otherwise than as aliens in the county of Yorkshire. It therefore became incumbent upon me to obtain more precise information about the early history of the female parent. So I ventured to write to Mr. Harrison, suggesting to him that as a good deal of uncertainty existed among entomologists generally as to the exact locality from which his female *zatima* was received in the pupa state, he might perhaps feel disposed to furnish more definite particulars concerning it than were to be found in the accounts already published. Mr. Harrison's reply was most courteous, but I need only quote such parts of it as directly bear on the point upon which information was sought. He says:—

"My original female *radiata*, and the only one I had emerge, came from a mixed lot of pupæ (*lubricipeda*, *menthastri*, and *persicariæ*) sent me by Mr. J. Riches, 52, Calverley Grove, Hornsey Rise, London. It is small in size, and of a pale *radiata* form.

"The male would be no doubt from those [pupæ] sent me by Mr. Tero, Grimsby, but not of the *radiata* form at all; in fact, all the others came out such ordinary forms that I liberated most of them after trying to pair them with *mendica*.

"I send you the original parents for inspection."

I have examined the specimens so kindly sent by Mr. Harrison, and notice that each of them has lost the apical portion of right fore wing. The female, bred from a pupa received from London, is referable to *zatima*; and the male, bred from a Grimsby pupa, is also a variety of *S. lubricipeda*, but not of the *zatima* form.

With a view of completing the history of this notable female moth, I also wrote to Mr. Riches for any items of information he might be able to contribute, and the substance of his reply runs as follows:—



"I well remember sending Mr. Harrison, of Barnsley, a quantity of pupæ of *Spilosoma lubricipeda* with some of *S. menthastri*, and, may be, other species, as I took many of the pupæ from a wall covered with ivy and other creepers. Larvæ were very abundant that year, and ate up nearly all the flowers in the garden, a private one, where I took them, and where I have been engaged for fifteen years. During that time I bred *S. lubricipeda* most years, but have never bred a variety, or even seen one of the species, in this locality, and I am surprised to hear that Mr. Harrison did [that is, breed a variety from Hornsey pupæ].

"I may say that I have had no correspondence with Mr. Harrison since we made the exchange."

The foregoing comprises all the particulars relative to Mr. Harrison's original female *zatima* that I have been able to obtain, and I have very great pleasure in presenting them to readers of the 'Entomologist.' I had hoped to have learned from Mr. Riches that he also had bred the *zatima* form of *S. lubricipeda* from larvæ or pupæ found at Hornsey, but this it appears he did not do; and further, as will be seen from the extract from his letter, he states that he has not even seen a variety of this species in his locality.

## RHOPALOCERA FROM THE ALPES-MARITIMES IN 1893.

BY FRANK BROMILOW, F.E.S.

PERHAPS the following list of butterflies, taken by myself during the present year, may be of interest, and will supplement those species already noticed in the 'Entomologist,' viz. :—

*Papilio podalirius*, L. Common everywhere; rare at an elevation of 3300 feet. *Ab. zancleus*, Z. I caught a female example in the Vallon des Fleurs, Nice, on July 26th, settled on a *Rhamnus* (buckthorn); and a worn male a few days later. *P. machaon*, L. Abundant nearly everywhere; first taken on April 4th, at Vence-Cagnes.

*Thaïs polyxena*, Schiff. I only took two males at Cagnes, on April 4th.

*Aporia crategi*, L. Nearly everywhere; first seen near a place called Vence, department of Var (1100 feet altitude), on May 29th.

*Pieris brassicæ*, L., and *P. rapæ*, L. Occurred up to nearly 4000 feet. *P. daphidice*, L. Generally distributed; also in the mountains, up to about 3300 feet altitude. *Var. bellidice*, O. Not rare; an example was taken at St. André, near Nice, on April 21st.

*Anthocharis belia*, Cr. I have bred three imagines from larvæ collected; the first specimen emerged on May 5th; common. *Var. ausonia*, Hüb. Obtained three imagines *ex larvâ*; first bred, May 30th; abundant. *A. cardamines*, L. One seen on an excursion to the Gorges du Loup (Var), by the newly-opened Sud de la Francé line from Nice to Digne, on March 11th; very common in the spring. *A. euphenoides*, Stgr. I took a very small male, measuring only an inch and a quarter in expanse, above Vence, on May 14th last; all the examples I have seen from this locality, this year, seem dwarfed; common at Nice, &c., April–May.

*Leucophasia sinapis*, L. Abundant on the coast; scarce at Caussols (3960 feet above sea-level).

*Colias hyale*, L. Common everywhere; first seen on April 24th at Nice, in the Vallon des Fleurs; also at Caussols. *C. edusa*, F. Abundant; it is commoner than the preceding; also at 3960 feet altitude. In some specimens the arrow-shaped spots at the hind margin of the under side of the fore wings are five in number, and in others only three, in which latter instance the dots only occupy half the area of the wing. I beat two larvæ of *edusa* off *Medicago arborea* as late as October 27th, one of which measured seven-twelfths of an inch in length. Ab. female *helice*, Hüb. Occurs sparingly with the type; some beautiful female forms, intermediate between the type and *helice*, were to be met with.

*Thecla ilicis* v. *æsculi*, Hüb. First seen on June 30th, in the Vallon des Fleurs at Nice; also in the Val Obscur (Nice).

*Polyommatus alciphron* v. *gordius*, Stgr. First noticed at Vence, at a height of 1100 feet above sea-level, on May 29th; occurs sparsely up to nearly 4000 feet altitude. *P. phlæas*, L. Generally distributed. Var. *eleus*, F. First taken this year in our garden at Nice, on *Eupatorium cinnabarinum* (eupatory), on June 21st, and almost replacing the type during the summer. I took an exaggerated form of this variety on August 7th, at Caussols, in which the dark brown hind marginal border of the front wings was twice as broad as in the usual *eleus*, and was jet-black. The copper colour of all the wings, too, was of a fiery red. On the hind wings there were no traces of the row of blue spots which are sometimes present near the hind margin. *P. dorilis*, Hufn. This insect was also met with in the mountains.

*Lycæna bætica*, L. Chiefly in gardens; about a dozen examples have been taken altogether during October; last seen in our garden on October 28th. I have observed the species to visit the flowers of the following plants, viz., *Cassia floribunda*, *Eriobotrya japonica* (loquat tree), and *Mirabilis jalapa* (marvel-of-Peru). *L. telicanus*, Lang. The first example (a male) taken this year was caught in the Vallon des Fleurs, on June 29th, where it is extremely common. In Nice it also occurs in the valley of the Mantéga, at Barthélemy, the Val Obscur, and in the mountains at St. Martin-Vésubie at 3300 feet altitude. It also frequents gardens. *Telicanus* swarmed on the outskirts of a disused garden at St. Maurice, overgrown by a tall yellow composite (*Inula graveolens*), which it particularly seems to affect. I took fresh specimens up to October 21st. The species is subject to albinism. I have met with a form having some of the white streaks and bands at the hind margin of the under side of the hind wings confluent, thus forming a continuous white band. Another variety has the tails about half the normal size, and with the white tips intact. One example I took had one of the tails of the normal size, while the other was about half the size. *L. agon*, Schu. Rare at a height of nearly 4000 feet, but common in many spots at a lower elevation. *L. orion*, Pallas. First observed at Vence on May 29th last; also at Levens and the gorge de St. André near Nice. *L. astrarche*, Bgstr. Not uncommon. *L. icarus*, Rott. Abundant everywhere. Ab. *icarimus*, Scriba. Occurs with the type, but is somewhat scarcer; it seemed quite common at Caussols to the north of Grasse, and I got a good series. Ab. *cærulea*, Bon. The true variety appears rather scarce, but individuals passing to the ab. *cærulea* are by no means rare. *L. escheri*, Hüb. Nice, &c., and in the mountains up to 3300 feet elevation; first taken in the Val Obscur (Nice) by my



cousin, on July 4th. *L. bellargus*, Rott. Generally distributed. *L. corydon*, Poda. Common everywhere; first noticed at Vence, on May 14th. *L. hylas*, Esp. Occurred at Vence, Caussols, and other places, but was never abundant; first seen on May 29th last. I took a female example at Caussols, on August 22nd, in which the yellow spots were absent from the fore wings, and almost completely so from the hind wings. On the under side the basal spot on the under side of the hind wings had the white surrounding the black spot greatly enlarged, while the dot itself was quite small. *L. admetus* v. *ripartii*, Ferr. This local species was quite common at Caussols. Donzel says that the insect flies in September; but I never saw any individuals of this brood, though I stayed on all through the month. *L. damon*, Schiff. Quite common at Caussols; the females, too, which seem usually scarce, were not rare; first captured, July 30th. *L. sebrus*, B. One specimen was taken at Vence, on May 29th last. *L. cyllarus*, Rott. Appears to be pretty generally distributed; flies also in the mountains up to an elevation of between 3000 and 4000 feet; common on the coast at Nice. *L. melanops*, B. I only took one specimen at Vence, on May 29th. *L. arion*, L. Nice, in the Val Obscur and Vallon des Fleurs; locally common on the coast in places; met with up to about 6294 feet; first taken this year on June 11th, but it may be captured at a much earlier date.

(To be continued.)

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## BEMBIDIUM LUNULATUM, GEOFFROY, AS A NEW BRITISH SPECIES.

BY THE REV. H. S. GORHAM, F.Z.S., &c.

IN the 'Entomologist's Monthly Magazine' for November there is a very interesting note, by Mr. E. A. Newbery, upon a species of *Bembidium* hitherto unrecognised as a species, either here or on the Continent, except by M. L. Bedel. As the editorial remarks seemed to throw some doubt upon both this insect and the species known to us as *B. riparium*, Ol., I turned at once to my collection, and I can quite corroborate Mr. Newbery's observation; and I fully agree with M. Bedel that there are three species, abundantly distinct, and easy to separate. These insects, together with *B. æneum*, and *B. guttula*, and *B. mannerheimi*, form the section or subgenus *Philochthus*; and the species now noticed as *B. lunulatum* of Fourcroy is, to my mind, as distinct from either, as they are severally from each other. Indeed, I have never mixed them. I do not find *B. æneum* myself; and during the summer of 1892 I took several *Philochthi*, I think generally by the sea-shore, hoping to get *B. æneum*. One of these I had placed doubtfully as that species, the remainder I had kept with undetermined insects; they are the species which M. Bedel identifies with *B. lunulatum*. This species is, however, to be attributed to Geoffroy rather than Fourcroy, who only edited the publication, 'Entomologia Parisiensis,' in which it is found. See



an abstract of the species by Geoffroy, 'Stettiner Ent. Zeitung, xii. p. 132.

I cannot vouch for the identification, but the fact remains,—we have an unrecognised species, for which the name *lunulatum*, Geoff., may be used. I shall myself prefer to use *riparium*, Ol., for the species with pale bases to the antennæ, as it has been so used generally by Schaum and others. Of course it is *B. lunulatum* that is the "New British Species."

*B. iricolor*, it seems to me, is a mere synonym of *B. riparium*, as it has been recognised for the last thirty-three years; and I do not see that any confusion need arise whatever.

The Chestnuts, Shirley Warren, Southampton.

### THREE NEW COCCIDÆ FROM THE ARID REGION OF NORTH AMERICA.

By T. D. A. COCKERELL.

*Fairmairia* (subg. *Ceroplastodes*, nov.) *nivea*, n. sp.

FOUND at Montezuma R. R. Station, State of Chihuahua, Mexico. On the twigs of a spiny shrub (*Acacia*?) in some abundance; singly, or sometimes two close together, but then not at all coalescing.

*Scale*.—Length about 4 mm., height about  $2\frac{1}{2}$  mm., breadth nearly 3 mm. Rounded, with rather roughened surface, but no indication of plates; snow white, slightly shiny. The scales are very regularly formed; the white substance is thin, and not like the wax of *Ceroplastes*. There is a variable posterior cleft, which has its sides usually contiguous for its outer half, but apart inwardly, forming a distinct more or less oval aperture. The dorsum sometimes presents two very distinct knobs, conical, blunt, with concentric grooves or striæ; these are normal in greater or less degrees of development. The young larvæ are elongate, and look, on the twigs, rather like those of *Tachardia*.

*Adult female*.—The body (boiled in caustic soda) is brownish yellow, with the legs and antennæ pale brown. The side of the body presents a row of rather short stout spines. Antennæ seven-jointed: 1st very broad, nearly twice as broad as any other; 1st also longest; the other joints subequal, but 5 distinctly shortest; 6 emitting a stout bristle; 4 with a longer and more slender bristle; 7 with several hairs. The last joint is constricted about its middle. Femur short; trochanter with a long hair; tarsal clubbed hairs present, ordinary. Mouth-parts peculiar, in that the rostrum is divided longitudinally into two plates, the truncate or obscurely rounded ends of which each emit three spines, of which the two innermost spines of each plate are nearest to one another.

*Larva*.—Elongate-oval; legs with digitules and clubbed hairs. Posterior cleft distinct, with a pair of elongated tubercles, each emitting a bristle, which reaches about to the orifice of the cleft. Each side with about fifteen broad low processes, from which proceed short elongate processes, two to four on each. These structures remind one of the tufts of the very young larva of *Ceroplastes*, which afterwards go to form the waxy covering.

*Egg*.—Oval, dark madder-pink.

There is no known American genus which could contain this insect. It is related to *Fairmairia*, Signoret, founded on a single species from the South of France; and to *Inglisia*, Maskell, a New Zealand genus. I thought it might be referred to *Inglisia*, until I compared it with five species of that genus, kindly sent to me by Mr. Maskell. These species show characters of the scale, —the striation, semitransparency, &c., which do not occur in *F. nivea*. While they differ considerably from one another, they have a facies of their own, and apart from the difficulty of accounting for the presence of an *Inglisia* in Mexico, I do not think the scale now described can be placed in Maskell's genus.

On the other hand, our scale is not altogether like that of *Fairmairia*; but it seems best to leave it in that genus for the present, placing it in a subgenus *Ceroplastodes*, which is characterised by the more or less hemispherical scale with dorsal knobs, the divided rostrum, and the seven-jointed antennæ.

If necessary, this name can be used in a generic sense. An orange-coloured mite was found associated with *F. nivea*.

*Ceroplastes irregularis*, n. sp.

Found six miles north of Montezuma R. R. Station, State of Chihuahua, Mexico, on stems of *Artemisia*.\*

*Scale*.—About 5 mm. long or less, hemispherical, moderately depressed, but extremely irregular, and in many cases almost shapeless, appearing like a mass of cereous nodules. Colour pale ochreous. No definable plates. Dorsal knob inconspicuous. Adjacent scales often running together. This is by far the most shapeless and nodulose *Ceroplastes* I have seen.

*Adult female*.—Derm yellow-brown, perforated in most parts by large holes or gland-pores. Legs present; trochanter with a long hair; femur about as long as tibia; tarsus nearly as long as tibia, the long tarsal bristle of larva represented by a short stout spine.

*Egg* (in soda).—Oval, brown.

*Larva*.—Elongate, boat-shaped in outline, widely cleft posteriorly, legs long. Caudal filaments moderately long; diverging, but curving inwards towards their ends; each with a small bristle on its inner side (*i. e.*, on the margin caudad of it), and with two small bristles cephalad. Tarsus of hind leg with a very long bristle; knobbed hairs of tarsus slender and remarkably long; digitules of claw also slender and long. Antennæ six-jointed: 3 and 6 longest; 6 variable, sometimes about as long as 3, usually shorter. In some, joint 3 shows a false joint, or tendency to split into two. Last joint with a long hair.

I quite expected that this would prove identical with the undescribed *C. artemisiæ*, Riley MS.; but on sending specimens to Prof. Riley, I was informed that it was distinct. *C. artemisiæ* was found in New Mexico; it is unknown to me.

\* Since writing the above, I have had my doubts about the food-plant. It was not in flower, and I think it may have been *Sarcobatus*. Consequently I have changed the specific name which connected the insect with *Artemisia*.



*Pseudococcus helianthi*, n. sp.

On a young *Helianthus*, on the leaves, attended by ants; afterwards on other sunflowers, and more numerous on a narrow-leaved species of compositæ, not in flower. Las Cruces, New Mexico, U.S.A.; alt. 3800 feet; July 1st—20th, 1893. Young were hatching July 9th.

*Female*.—Three mm. long or a little over. Grey, covered above and at sides with white mealy secretion; segmentation distinct; legs pale brown; antennæ very slender, pale brown. Caudal appendages thickly clothed with secretion, short, less than half length of body. Lateral appendages well clothed with secretion, short but distinct, more or less pointing backwards, instead of being at right angles to margin. Anterior appendages (= first laterals) rather more conspicuous than the laterals. No bands or marks. The body has three obscure longitudinal ridges, one mid-dorsal, the others sub-lateral. The general appearance is like Signoret's figure of *Dactylopius citri*. Boiled in caustic soda, it does not stain the liquid. Derm with many gland-dots. Antennæ nine-jointed; 2nd joint longer than 3rd (as in *P. socius*). Specimens examined showed some slight variation in the proportions of the joints, thus:—(1) Specimen from *Helianthus*. Joint 2 longer than 3; 3 longer than 4; 5 longer than 4, but rather shorter than 3; 6 equal to 4; 7 and 8 shortest; 9 about as long as 5. Formula therefore 23 (59) (46) (78). (2) Specimen from Composite plant with narrow leaves: 5 longer than 4; 2 longer than 3; 9 longer than 5, but shorter than 3. Formula 239 (56) (478). Eyes raised on tubercles, concolorous with body (after boiling in soda). Trochanter with a fairly long bristle. Femur stout, with several short bristles. Tibia slender, about as long as femur, bristly. Tarsus about half length of tibia. Digitules hardly discernible; apparently no tarsal clubbed hairs. Anal ring with eight hairs, but one smaller than the rest. Coxa and trochanter with several small bristles. A female found on sunflower was observed on July 7th to have constructed its sac:—Sac cottony, snow-white, about 5 mm. long; the body of the insect, now pale brownish, projects from the sac at one end. Sides of sac parallel, the cottony matter much looser on the back than at the sides. Without the sac, the insect looks like a *Dactylopius*; with it, it might be taken at a superficial glance for *Pulvinaria*. Newly-hatched larva pale yellow.

Las Cruces, New Mexico, U.S.A., July 21, 1893.

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, Ph.D., F.L.S., &c.

(Continued from p. 293).

*Spirama martha*.

*Hypopyra martha*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. i. p. 292 (1878); Ill. Typ. Lep. Hist. iii. 41, pl. xxxiv. fig. 3.

*Spirama ægrota*, Butler, Trans. Ent. Soc. 1881, p. 197, n. 86. Japan. Types in Coll. B. M.



*Hypopyra feniseca.*

*Hypopyra feniseca*, Guenée, Noct. iii. p. 200, n. 1590 (1852).

Var. *H. ossigera*, Guenée, l. c., p. 201, n. 1600 (1852).

Salanga, Darjiling, and Dharmsala. In Coll. B. M.

*Hypopyra vespertilio.*

*Noctua vespertilio*, Fabricius, Mant. Ins. ii. p. 136, n. 16.

*Hypopyra shiva*, Guenée, Noct. iii. p. 190, n. 1597 (1852).

*H. extricans*, Walker, Lep. Het. xiv. p. 1328, n. 11 (1857).

*H. dulcina*, Felder, Reise der Nov. Lep. iv. pl. cxv. fig. 10.

*H. pandia*, Felder, l. c., fig. 12.

*H. pallida*, Moore, P. Z. S. 1883, p. 26; Lep. Ceyl. pl. 166, figs. 1, 1a.

India, Ceylon, Japan. In Coll. B. M.

This is one variable species, all the forms being completely connected by transitional examples.

## EMMONODIA, Walk.

*Emmonodia pudens.*

*Hypopyra pudens*, Walker, Lep. Het. xiv. p. 1329, n. 13 (1857).

*Emmonodia hypopyroides*, Walker, l. c., p. 1333, n. 1 (1857).

*Hypopyra grandæva*, Felder, Reise der Nov. Lep. iv. pl. cxv. fig. 11.

Var. *H. persimilis*, Moore, P. Z. S. 1877, p. 608.

Andamans, Borneo, Sumatra, and Nias. Type in Coll. B. M.

It is very doubtful, I think, whether this species occurs in India. Walker's locality, "Hindostan?", is quite unwarranted. Moore's *H. persimilis* is the form in which the dark blotch has wholly disappeared from the primaries; the type of *E. hypopyroides* is an example in which it is reduced to a small interrupted spot.

## HULODES, Guen.

*Hulodes drylla.*

*Hulodes drylla*, Guenée, Noct. iii. p. 209, n. 1609 (1852).

*H. saturnioides*, Guenée, l. c., n. 1610 (1852).

*Hypopyra restorans*, Walker, Lep. Het. xiv. p. 1328, n. 12 (1857).

Dharmsala, Silhet, and Moulmein. In Coll. B. M.

The proper position of this genus is next to *Emmonodia*. Many of Guenée's families, as he left them, were nothing more than arbitrary collections of genera, having but little in common with one another. I suppose it would be difficult to find a more heterogeneous group than Guenée's family Bendidæ.

## MAXULA, Walk.

*Maxula unistrigata*.

*Hypopyra unistrigata*, Walker, Lep. Het. xiv. p. 1327, n. 10 (1857).

*Angerona? poensaria*, Walker, l. c., xx. p. 243 (1860).

*Maxula idonea*, Walker, l. c., Suppl. 3, p. 1096 (1865).

Silhet, Darjiling, Moulmien. Type in Coll. B. M.

## HAMODES, Guen.

*Hamodes aurantiaca*.

♀ *Hamodes aurantiaca*, Guenée, Noct. iii. p. 203, n. 1603 (1852).

♂ *Aphisma attaccicola*, Walker, Lep. Het. xiv. p. 1383, n. 33 (1857).

N. India. In Coll. B. M.

I have very little doubt of the correctness of the above synonymy, and I strongly suspect that *H. discistriga* of Moore is only a variety of the same species.

## BLOSYSIS, Hübn.

*Brujas*, Guenée, and *Latebraria* (part), Walk.

M. Guenée himself virtually admits the imperfection of his genus *Brujas*, every character he gives for distinguishing it being comparative, whilst the most closely related forms (possibly no more than varieties of one species) are generically separated by imaginary structural differences.

*Blosyris opigena*.

*Phalæna opigena*, Drury, Ill. Exot. Ent. ii. pl. 22, fig. 4 (1773).

*P. acron*, Cramer, Pap. Exot. iii. pl. 227, fig. B (1782).

*Thermesia abadirina*, Hübner, Samml. Ex. Schmett. Zeitr. n. 119, figs. 237, 238 (1823).

*Cyclopis respiciens*, Walker, Lep. Het. xiii. p. 1289, n. 3 (1857).

*Lygniodes repellens*, Walker, l. c., xv. p. 1816 (1858).

Jamaica, Honduras, and Rio Janeiro. In Coll. B. M.

Hübner gives a reference to "Cramer, Kapell. 227. B. Gootenaria." How he managed thus to blunder it is impossible to say, since *Blosyris gootenaria* was described and figured in a later volume.

*Blosyris vates*.

*Brujas vates*, Guenée, Noct. iii. p. 141, n. 1525 (1852).

*B. incedens*, Walker, Lep. Het. xiv. p. 1256, n. 12 (1857).

*B. despecta*, Walker, l. c., xv. p. 1819 (1858).

Pará, Amazons, West coast of America. In Coll. B. M.

*Blosyris malitiosa.*

*Blosyris opigena*, Hübner, Exot. Schmett. ii. pl. 211, figs. 1-4 (1806).

*Brujas malitiosa*, Guenée, Noct. iii. p. 140, n. 1521 (1852).

*B. infans*, Guenée, l. c., p. 141, n. 1523 (1852).

*B. includens*, Walker, Lep. Het. xiv. p. 1256, n. 13 (1857).

*Latebraria contacta*, Walker, l. c., p. 1284, n. 5 (1857).

Pará, Brazil, Theresopolis. In Coll. B. M.

A slightly variable species, closely allied to the following, which, however, differs somewhat in the position of the lines across the wings on the under surface, and may, therefore, be distinct.

(To be continued.)

## NOTES AND OBSERVATIONS.

"*ZYGÆNA MELILOTI*?"—Under this heading, Mr. J. H. Fowler has a note (Entom. 127, 128) to the effect that two examples of a *Zygana*, which he had taken on a chalk-hill in Dorset, were pronounced by Mr. Charles Gulliver, of Brockenhurst, to be undoubtedly *meliloti*. Subsequently Mr. Fowler very kindly made me a present of these two moths, and on examination I found them to be very small and thinly-scaled specimens of *trifolii*, bearing a superficial resemblance to *meliloti*, but genuine *trifolii* without, to my mind, any shadow of a doubt. The only other record of the occurrence of *meliloti* in this country is to be found in Mr. C. W. Dale's 'Lepidoptera of Dorsetshire' (1886), and runs as follows:—"A single specimen was taken on Parley Heath, by J. C. Dale, years ago." Not having seen the specimen referred to, I can say nothing about it, but, as regards the locality mentioned, Parley "Heath" (or "Common," as it is called on the maps) is situated partly in Dorset and partly in Hants, and about four or five miles from the western boundary of the New Forest (Hants), in which lies the home of *Z. meliloti* in Britain.—EUSTACE R. BANKES; The Rectory, Corfe Castle, Dorset, Nov. 2, 1893.

THE MELANISM CONTROVERSY.—I was rather surprised by capturing a black variety of the bee, *Melecta punctata*, on the 16th of April last. The species is a fairly common one, and it is a parasite of another bee, *Anthophora retusa*, but it is the only instance of the black variety being found in Dorsetshire. Its appearance in such a bright and warm spring as we have had this year, seems rather opposed to the idea that melanism is caused by cold and sunless climates. Mr. Kane, in his paper on the above subject, says that he does not know that any portion of the Rhopalocera in the British Islands are remarkable for melanochoic tendencies. Perhaps not; but where do we find whitish or brilliant-coloured species of Lepidoptera, such as *Melanargia galatea*, *Lycæna corydon*, *L. adonis*, *Eubolia bipunctaria*, *Melanippe procellata*, the light variety of *Gnophos obscuraria*, &c.? Why, on the white and light-coloured soils of the South of England, i. e., chalk and limestone. On the other hand, we find the dark variety of *G. obscuraria*, and various dark-coloured species, on black peaty soils.



Species the larvæ of which feed on lichens are mostly of a greenish hue, as *Bryophila*, *Cleora*, &c. Species the larvæ of which feed on reeds are straw-coloured, as *Macrogaster*, *Nonagria*, &c. Mr. Wollaston, in his 'Variation of Species,' notices the marked tendency which insects peculiar to saline spots would seem in a large measure to possess of converging, more or less obviously, to a lurid-testaceous or pale brassy hue in their colouring. Again, if we ascend to the higher creation, we find that animals and birds frequenting snowy regions are white, as the polar bear, lemming, snowy owl, ptarmigan, &c. I do not bring forward these facts for the sake of starting any dogmatic theory, but I think they are worthy of consideration by those who endeavour to account for the cause of melanism.—C. W. DALE; Glanvilles Wootton, Nov. 3, 1893.

VANESSA ATALANTA IN FLORIDA.—Amongst a large number of insects sent me by a friend from Florida, there is a specimen of *V. atalanta*. My friend tells me the butterfly is common there on the cold lands, that is, lands which were originally the bottom of a lake, and are cold probably on account of the quantity of moisture still about. Cabbages and potatoes, "which will only grow in these places," often get killed by about two degrees of frost. The butterfly forwarded to me is less in expanse by three lines than the British insect, the colours are not so bright, and the red band on the upper wings is centrally crossed by two conspicuous, triangular black blotches inverted to, but at a short distance away from, each other. In many British specimens there is, on the upper wings, on the basal side of the red band and near this band, a parallel, red, and wedge-shaped streak. This streak is seated on the subcostal ray, and stretched almost across the discoidal cell. I netted a specimen, Sept. 16th, at Delamere, in which the point of the streak is curved round and joins the red band. The Florida insect, like many British ones, is entirely without this wedge-shaped mark, which does not appear to be sexual. The male is figured by some authors, but I cannot find it anywhere described.—J. ARKLE; Chester.

SEXUAL MARK IN VANESSA ATALANTA.—The female is credited with a small, round, white spot in the lower portion of the red band on the upper wings. I have seen this spot in the female. Sometimes it is very distinct; in other specimens it is almost microscopic, if not entirely absent. Is the mark ever absent in the female; in short, is it really sexual?—J. ARKLE; Chester. [Although a white spot is frequently present in the red band on the fore wing of female *V. atalanta*, the mark cannot be regarded as a constant character of this sex. Further, we have conclusive evidence that the white spot is not confined to the female, but is found in the male also (*vide* Entom. xxv. 295).—ED.]

GREAT SCARCITY OF LARVÆ.—I never remember autumnal larvæ to have been so scarce as this season. At the end of August I was beating for over three hours near Chingford and Loughton, and the result was most disappointing:—*Platypteryx unguicula* (3), *Metrocampa margaritaria*, *Eurymene dolobraria* (1), *Ephyra trilinearia*, *Dasychira pudibunda* (1), and *Halias prasinana* (2), nearly all from beech. I had worked the oaks for quite half an hour before I dislodged one lepidopterous larva. What a contrast to the same localities at the end of May, when larvæ were in numbers quite astonishing. I tried a few hours' birch-beating at the end of September, with the following result:—*Metrocampa margaritaria* (3), *Geometra papilionaria* (2), *Cabera pusaria* (1), *Notodonta camelina* (1), and *N. dictæoides*

(4), so that the last mentioned was apparently the commonest larva on the birches. With regard to the common larvæ, which are usually too plentiful in suburban gardens, I am able to say that I have not noticed either *Spilosoma menthastri* or *S. lubricipeda*, and only one of *Hadena oleracea*. The larvæ of the commonest species of the genus *Acronycta* appear to have been very scarce; and I have not seen *Orgyia antiqua* in any of its stages. Surely the early and prolonged heat of the past summer cannot be alone the cause of this strange dearth of larvæ.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, N., Oct. 2, 1893.

BRITISH BUTTERFLIES.—Will readers of the 'Entomologist' kindly inform me what is the largest number of species of Rhopalocera they have met with in this country in any single day in each month of the year? Specification of the locality would also be useful. I should likewise be glad of similar information for each month of the present season.—W. HARCOURT BATH; 195, Ladywood Road, Birmingham.

ABUNDANCE OF CHYSOPHANUS PHLÆAS IN 1893.—This butterfly has been exceedingly plentiful during the present season in every locality visited by myself in South Britain, although it has been scarce for several years previously.—W. HARCOURT BATH.

ABUNDANCE OF ALEURODES BRASSICÆ, *Walk.*—This little snow-white insect has this year appeared in such extraordinary abundance amongst the garden cabbage as to be a perfect pest. My gardener told me that one day, while hoeing amongst the cabbages, he had to run away, as he was beset with a swarm of these little pests, which got into his eyes, nose, and mouth. Even when the cabbages are washed for dinner there are thousands of these little insects floating on the top of the water. The only insect I have ever known to equal them in numbers is a fly, *Sepsis hilaris*. After sweeping grass in woods I have known my net so full of them as to appear like a ball. Whether this little pest has appeared in such extraordinary abundance all over England, or only in Dorset, I do not know. Perhaps some of your other correspondents will enlighten us. It belongs to the Homoptera, and is allied to the Aphidæ.—C. W. DALE; Glanvilles Wootton, Nov. 3, 1893.

THE FIELD CRICKET (*GRYLLUS CAMPESTRIS*).—Will readers of the 'Entomologist' kindly inform me the names of all the localities where they know this local insect to exist? Any information concerning its habits would also be very acceptable.—W. HARCOURT BATH.

NOCTUÆ AND FLOWERING GRASSES.—Anent the communications of your correspondents, Messrs. G. O. Day and H. E. Taylor (*ante*, pp. 229, 321), respecting the attractiveness of the flowers of certain grasses, it may interest your readers to be reminded that, just half a century ago, in the pages of the 'Zoologist,' 1843, p. 64, and also in his charming little book, 'The World of Insects,' p. 86, my old friend Douglas wrote as follows:—"On the evening of the 20th of August last, Mr. Bedell and myself were returning from mothing in the fields between the Kent Road and Greenwich railway, having had but very little success, when a moth was seen to rise from the grass, and, being caught, proved to be *Graphiphora punicea* (now *bella*) [which is to say, *Noctua rubi* of the present day]. We next began to sweep the grass, and were surprised to find moths, not singly or in dozens, but by hundreds. The next night saw us there with lanterns and other necessary apparatus, and if we were surprised the previous night, we were



then much more so. Almost every blade of grass had its insect; in fact, I do not believe that so many moths were ever before seen together. The majority were females, and Mr. Bedell found some eggs, which had apparently been recently deposited on the grass. Several subsequent visits were paid to the spot, and always with the same results; the quantity of moths visible, however, varying greatly on different nights, cold and windy weather having the effect of diminishing the number. The species taken were *G. plecta*, *G. punicea* (*bella*), *G. c-nigrum*, *L. umbrosa*, *S. xanthographa*, *G. micacea*, *A. fibrosa*, *L. pallens*, *O. lunosa*, *L. spectrana*, and *N. hybridalis*."—H. G. KNAGGS; Camden Road, London, N.W.

ABERRATIONS OF *LYCÆNA ICARUS*, Rott.—Perhaps the following notes on the aberrations of *Lycæna icarus*, which I have taken this season, may be of interest. Variety (1) is a female example, which I took in Nice on July 4th, having a small supernumerary dot joined to the basal spots on the under side of the fore wings. (2) Also a female, and taken on the coast at Nice, has the hind-marginal row of spots, which almost coalesce, uniform in size, thus forming a band. (3) I caught a very interesting female specimen, on August 30th, at Caussols, Alpes-Maritimes (3795 feet altitude), combining in one individual the forms *ab. icarinus*, Scriba, and *v. cærulea*, Gar.; that is to say, that the under side was of the *ab. icarinus*, with the basal spot on the under surface of the front wings absent, and the upper side was of the *ab. cærulea*, being suffused with blue in the usual manner. (4) I caught a female *icarus* at the last-mentioned place, on August 31st, having the two black spots nearest the inner margin, on the under side of the fore wings, confluent and arched, thus forming a crescent. I took two more subsequently (one male and one female); and my cousin E. C. Casey informs me he has another in his collection, taken prior to my examples; so that it appears not impossible that this last form may be considered as a constant variety, if it is not already recorded. The above are only a selection, and I could describe several more of almost equal interest. From a close examination of some numbers of *icarus*, I found that nearly every one had one or more extra spots on the under side (sometimes so small as to be hardly noticeable), which were not present in the type.—F. BROMILOW; Caussols, Alpes-Maritimes, France, Sept. 19, 1893. [Most of the aberrations of *L. icarus* referred to by our correspondent are not uncommon in Britain; but remarks on the variation of this, and also of other species, in places outside our own limited area, are always of interest.—ED.]

VARIATION IN THE SIZE OF *ARGYNNIS PAPHIA*.—While collecting in the New Forest last June, I noticed very considerable variation in size of *A. paphia*. A dwarf form was particularly numerous, some being remarkably small, the males measuring in expanse only 2 in. against 2 and 11-16th in. of the average male, and females 2 and 1-8th in. against 2 and 7-8th in. average female. Undoubtedly this dwarfing is attributable to the great dryness of the season, as *A. paphia* appears to be much influenced by climate, which was especially noticeable this season; for instance, the var. *valesina*, although fairly abundant, was very inferior in colour and size; hardly with exception, all the specimens I have seen of this year's capture were decidedly paler in colour, having a washy appearance, in great contrast to the large, rich and dark specimens of damp or rather wet seasons. The white-spotted form was this year abundant, which may also tend to bear on the subject; my friend Mr. J. H. Carpenter took a very fine series of these



white-spotted forms, including a few finely blotched females exhibiting partial coloration of *valesina*, which, so far as I have observed, is absent in the males, but Mr. J. W. Tutt mentions having seen it in a number of males captured this year in the New Forest.—F. W. FROHAWK; Oct., 1893.

AUTUMNAL EMERGENCE OF ARGYNNIS ADIPPE.—*Apropos* of my note upon a second emergence of *A. paphia* (Entom. 320), I am now able to record a still more remarkable case, *viz.*, a second emergence of *A. adippe*. On Sept. 2nd last, upon examining some plants of *Viola canina* upon which ova of *A. adippe* had been deposited the end of last June, I was much surprised to find a few of the ova had hatched, as I discovered one larva in its first stage, evidently only a few days old; and another in its third skin, *i. e.*, after the second moult, which remained in that stage until Sept. 27th, on which day it moulted for the fourth and last time; it attached itself for pupation on Oct. 12th, and pupated the following day, which resulted in a perfect male emerging to-day, Nov. 21st. I may mention that, normally, *A. adippe* remains for eight months in the egg state, the eggs generally being deposited at the end of July, and hatching the following spring about the end of March. From the advanced state of the larva when I first noticed it on Sept. 2nd, it had evidently hatched about the middle of August, thereby remaining for only six weeks in the egg state. I purposely avoided forcing the specimen during any stage, by keeping it in a temperature similar to that out of doors as much as possible; and since Nov. 10th the pupa has been placed in a temperature averaging 55°, in company with two *A. paphia*, which produced one fine normal female on the 20th, and a beautiful specimen of the var. *valesina* emerged on the 21st, at the same time as the *A. adippe*. On Sept. 20th I found six more young larvæ of *A. adippe* in first stage. The majority of the ova are still unhatched, therefore will pass the winter as in the usual way of the species.—F. W. FROHAWK; Balham, S.W., Nov., 1893.

THE BURNEY COLLECTION.—On November 21st and 22nd the valuable collection of British Macro-lepidoptera, formed by the late Rev. Henry Burney, was sold at Stevens's Auction Rooms. The butterflies were offered in one hundred and seventeen lots. Twelve specimens of *Pieris daphidice* were disposed of at an average of 16s. 9d. each, whilst a single example of this species and a variety of *Euchloë cardamines* were knocked down for £3 15s., the variety evidently ruling the bidding in this case. *Argynnis niobe*, of which there were two examples without data, were not much fancied, as lots 14 and 15, each of which included one specimen of this species, together with vars. of *A. aglaia*, only realised 10s. and 8s. respectively. There were twenty specimens of *A. latona*, and sixteen of these were disposed of in lots of four each, at £1 12s. 6d., £2, £1 10s., and £1 6s. Two specimens of the last species, with some vars. of *A. selene*, fetched 20s.; and two, with a fine suffused marked example of *A. selene*, found a purchaser at £3. Four more or less striking varieties of *A. euphrosyne* were sold for £3 15s., and two uncommon ones for £5. Twelve specimens each of *Melitæa athalia* and *M. aurinia*, including an almost black example of the former species and one or two unimportant aberrations of the latter, fetched £2 15s. *Vanessa c-album* realised about 1s. per specimen. A variety of *V. urticae*, comprised in a lot with other specimens of this species, and *V. polychloros*, was bought for £2 15s. The price of *V. antiopa*, of which there were no less

than sixteen examples (one dating as far back as 1806), ranged from 8s. to 20s, according to condition and history. Two nearly black *Limenitis sibylla*, in fair condition, were disposed of at £1 15s. each. The great feature of the sale was the magnificent series of *Chrysophanus* (*Polyommatus*) *dispar*, of which there were thirty-one specimens (16 males and 15 females). These were sold separately; the eighteen examples (male and female), offered on the first day of the sale, realised from £2 10s. (once) to £6 10s. (twice), and the thirteen (male and female) put up on the second day went for from £2 5s. to £5 10s.; the total sum for the entire series being £132 10s., equal to an average of about £4 5s. per specimen. Four lots of *Lycæna semiargus* (*acis*), five pairs in a lot, were sold at £4 5s., £4, and £5, and £4 5s., about an average of eight shillings per specimen. Another pair of *L. semiargus*, together with sixty *L. alus* and forty *L. argiolus*, produced 25s. A fine series of fifty-three *L. arion* were sold in lots of from five to twelve examples in a lot, and realised about 2s. 6d. a specimen. Space will not admit of reference to the Heterocera, but these will be reported on in the January 'Entomologist.'—R. S.

## CAPTURES AND FIELD REPORTS.

NOTES FROM NORTH-EAST HAMPSHIRE.—*Vanessa cardui* seems to have been conspicuous by its absence this summer, though some of the hybernated ones were seen in the spring. Until to-day I had not met with it, but I saw a single specimen in a warm sheltered corner this afternoon; I looked in vain for others. It has been a very curious season altogether, as far as butterflies are concerned especially. The larvæ of *V. io* and *V. urticae* were in countless numbers in this district, and an unusual quantity of hybernated imagines of *V. polychloros* were noted in the spring. What has become of everything? I believe, with others to whom I have spoken on the subject, that the birds and the swarms of wasps made away with all the larvæ and pupæ in the unusually dry summer. The only butterflies numerous in this locality have been *Vanessa atalanta* and *Polyommatus phlæas*; the latter seems to have been unusually plentiful everywhere. I may note that I saw cole tits hawking among the oak-trees after imagines of *Thecla quercus*. I never observed this before. Evidently the birds had a bad time of it, and devoured anything they could get hold of. Butterflies appear to have suffered chiefly, probably from the exposed habits of the larvæ and pupæ; but many moths also, plentiful here in previous years, were scarce or quite wanting. Notable exceptions were *Calymnia diffinis*, unusually common at sugar, *Catocala nupta*, the inevitable *Apamea didyma* (*A. basilinea*, quite rare), and *Noctua xanthographa*; while later on *Macroglossa stellatarum* appeared in considerable numbers, *Agrotis segetum* in swarms, and *Pterophorus monodactylus* turned up in quantities both at sugar and ivy. Can the hosts of *Agrotis segetum* owe their happy immunity from the bill of their enemy, the rook, to the hard state of the ground, which must have prevented the birds from digging under the turnips? In many ways the season of 1893 has been a very extraordinary one, and insects have appeared at most unexpected times. Among other startling captures, I may mention those of *Acronycta rumicis* on July 26th, and again early in September, and of *Leucania comma* (a fine fresh



specimen) on October 9th. *Xylophasia monoglypha* turned up at sugar this very day!—S. G. REID; Froyle House, Alton, October 18, 1893.

**POLYOMMATUS BÆTICA.**—In July, 1890, I was at Brighton for two or three days, and went on to the downs by the race-course about 6 o'clock in the evening, where they were cutting the corn. I had, as usual, my net with me, and caught what I thought was an ordinary "blue" (i. e. *Polyommatus alexis* of Curtis). Having no entomological pins with me, I pinned the insect with an ordinary black pin. I did not trouble, as it was rather battered. Taking it home, I put it by, and did not look at it for over a year, when I discovered it to be the *Lycæna bætica* given in Morris's 'British Butterflies.' I should then have written to your valuable Magazine, only I had unfortunately a serious illness. I believe the above *Lycæna bætica* is the same as *Polyommatus bætica*. The truth of the above statement and of the capture at Brighton can be corroborated by several of my friends.—J. N. SMITH; 30, Shooter's Hill Road, Blackheath, S.E.

**VANESSA ANTIOPA IN SOUTH DEVON.**—The Rev. W. F. Tiernay, curate of Kingston, near this place, tells me that while his brother, who was staying with him, was walking down to the sea at Mothecombe, on Tuesday, Aug. 15th, he saw a beautiful specimen of the "Camberwell beauty" (*Vanessa antiopa*). He knows the insect well, being an entomologist, and having seen two specimens in his sister's collection which were caught in Yorkshire, and he had a good view of this one quite close to him, both settled and flying, but he did not try to catch it, as he had no butterfly-net with him. I observe that the "clouded yellow" (*Colias edusa*) has been making its appearance again in this neighbourhood this year pretty frequently for the last six weeks.—G. C. GREEN; Modbury Vicarage, S. Devon, August 23—'The Field,' August 26, 1893.

**CLOSTERA ANACHORETA.**—It may interest some of your readers to know that we found, on August 23rd last, a cluster of nineteen ova of *Clostera anachoreta* on sallow at Bulverhythe, about three miles from here. They all hatched between the 30th of the month and Sept. 4th, the young larvæ spinning up at once between the leaves of sallow, on which they fed well; when full-grown they were remarkably fine and very handsome. They entered the pupæ state about the middle of October. Out of the above number I have sixteen pupæ, three of the larvæ giving in while going through their third change. Thinking the fact of finding this species in the wild state may be interesting to other collectors, I am hoping you will publish this note in the next number of the 'Entomologist.'—A. D. EDWARDS; 56, Marina, St. Leonards-on-Sea. [As it does not appear that our correspondent has bred *Clostera anachoreta* from the ova he refers to, we presume that he is well acquainted with this species in all its early stages, and therefore does not consider it necessary to await the emergence of the perfect insect to confirm his identification.—ED.]

**STERRHA SACRARIA IN HANTS.**—We took a fine specimen of *Sterrhia sacraría* on October 20th; it flew into a bed-room, attracted by the lamp. We have also taken a single specimen of *Sphinx convolvuli* at *Nicotiana* flowers. With the exception of the above and the *Plusia moneta* already recorded, the season has been much less productive of good insects than last year. Up to the middle of September I only saw one *Colias edusa*, but after that time they were fairly common on the cliffs.—R. E. BRAMELD; Ivy Cottage, Mudeford, Christchurch, Nov. 4, 1893.



NOTES FROM NORWICH.—In the early part of the summer we had the opportunity of rearing about twenty caterpillars of *Ennomos tiliaria*. Newman, 'British Moths,' p. 57, says:—"I know nothing of the caterpillar of this moth. Mr. Stainton, translating Treitschke, says it is wrinkled, brown, marbled with darker brown, with humps on the 6th and 10th segments," &c. From this it appears that Newman and Stainton were not acquainted with this caterpillar. On July 13th a female specimen of *Arctia caia*, which we had just taken, layed some eggs. The caterpillars emerged on the 24th of the same month. On Sept. 6th some of them were full-fed and commenced spinning; and on the 10th the first one pupated. By Oct. 9th most of them were in the chrysalis, and the perfect moths are now appearing. Is not this a very unusual occurrence? Eight only of them hybernated, at less than an inch in length. We took one example of *Arctia* (*Spilosoma*) *urticae* at Sprowston, on May 20th, at a lamp; also about thirty specimens of *Heliophobus* (*Neuronina*) *popularis*, of which two only were females, and from these we have been fortunate enough to obtain about sixty eggs, which we hope to rear next summer.—B. C. TILLET; Sprowston Lodge, Norwich. [*Ennomos tiliaria* is now more generally known as *Eugonia alniaria*. The larva was described in 1866 by the late Rev. J. Hellins (Ent. Mo. Mag. iii. p. 162), and by the late Edward Newman in 1870 (Entom. v. p. 196). It is also figured by Wilson in 'Larvæ of British Lepidoptera,' pl. xvii. (1880). The partial second brood of *Arctia caia* referred to is not an altogether exceptional occurrence, but is interesting because it appears to have been the result of the late remarkable summer. In other cases recorded of second broods of this species the conditions were largely artificial.—ED.]

NOCTUÆ IN FORFARSHIRE.—The following is a list of Noctuæ taken in the neighbourhood of Montrose, N.B., between July 27th and October 3rd, 1893; all captured either at sugar or ragwort flowers:—*Leucania conigera*, *L. lithargyria*, *L. impura*, *L. pallens*, *Hydræcia nictitans*, *H. micacea* (very common), *Xylophasia lithoxylea*, *X. polyodon* (var. *athlops*, several), *Apamea oculatea*, *Miana strigilis*, *M. literosa* (abundant), *Charaas graminis* (var. *rufa*), *Luperina testacea* (var. *x-notata*), *Celæna haworthii*, *Mamestra brassicæ*, *Caradrina cubicularis*, *Rusina tenebrosa*, *Agrotis valligera*, *A. saucia*, *A. nigricans* (var. *fuliginea*), *A. suffusa*, *A. præcox* (fine), *A. cursoria* (vars. *brunnea* and *sagitta*), *A. tritici* (vars. *valligera* and *albilinea*), *Triphæna ianthina*, *T. fimbria*, *T. pronuba*, *T. orbona* (var. *comes*, common), *Noctua castanea* (one only at sugar), *N. baia*, *N. glareosa* (dark grey varieties, and about a dozen var. *suffusa*), *N. c-nigrum* (abundant), *N. augur* (common), *N. brunnea*, *N. festiva*, *N. conflua* (a few), *N. xanthographa*, *N. plecta* (first taken, August 26th), *Orthosia lota* (three at sugar), *Anchocelis pistacina* (a few), *A. litura* (most abundant), *Xanthia silago*, *X. cerago* (var. *flavescens*), *X. ferruginea*, *Cosmia trapezina*, *Polia chi* (rather dark), *Epunda nigra* (fairly common), *Hadena oleracea*, *Calocampa vetusta* (thousands), *Plusia gamma*, *Amphipyra tragopogonis*, *Mania typica*. Mr. Duncan, the curator of our museum, has taken one specimen of *Cloantha solidaginis*, one *Agriopis aprilina*, and one *Thyatira batis*.—MONTAGUE S. W. GUNNING; The Mall, Montrose.

COLIAS EDUSA IN DEVONSHIRE.—*Colias edusa* appeared rather plentifully during the spring months on the coast near Seaton, the first butterfly on March 29th, and I have either seen or captured it every month since. On June 20th I took a fresh male near Bridestowe; and on July 3rd both

saw and took several. From this time on the insect appeared in considerable numbers. It was abundant near the Start point on July 12th and 13th. During September it could be observed on every fine day, continuing all through October; and I noticed several on November 2nd on the coast here.—JOHN N. STILL; Seaton, Devon.

COLIAS EDUSA IN KENT.—I saw several specimens of *C. edusa* on the wing to-day, along the west cliff towards Sandgate; some were in fair condition; others were worn, and had evidently been on the wing for some considerable time. They have occurred sparingly from time to time the whole of the season through. The date mentioned being late in the season for the species, it is interesting.—W. PURDEY; Folkestone, Oct. 29, 1893.

COLIAS IN JERSEY.—With regard to the occurrence in Jersey of *Colias edusa* and *C. hyale*, in the seasons of 1892 and 1893, I should like to make the following remarks. In 1892 *C. edusa* was exceedingly common, being found almost everywhere and in vast numbers. Its pale var. *helice* was also far from rare. *C. hyale*, on the contrary, was very scarce; indeed, I only know of one specimen being seen in the whole of the season. In 1893 although *C. edusa* was not rare, yet its numbers fell far short of last season's, while *C. hyale* was much more abundant. A good many of the latter have been seen; almost as many, indeed, as of *C. edusa*.—STANLEY GUITON; 31, Bath Street, St. Heliers, Jersey, Oct. 24, 1893.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—November 8th, 1893.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Henry Jerome Turner, of 13, Drakefell Road, Hatcham, S.E.; Mr. F. W. Urich, of Trinidad, West Indies; and Mr. John Cooper Webb, of 32, Henslowe Road, Dulwich, S.E., were elected Fellows of the Society. Mr. F. Merrifield exhibited some low-temperature forms of *Vanessa atalanta*, artificially produced, which showed a great reduction in the area of the scarlet bands on the wings, and a great increase in the area of the white and bluish markings. Professor E. B. Poulton described and illustrated, by means of a map, a simple method for showing the geographical distribution of insects in collections. Below the name-label of the genus, and of each species, were placed coloured slips of such a size as to be distinctly visible at a distance, and the colours, with one exception, corresponded with those made use of in the map at the beginning of vol. i. of Dr. A. R. Wallace's 'Geographical Distribution of Animals.' The exception referred to was the Palearctic Region, which was coloured blue, instead of pale brown as in the original. Framed maps of the same kind, and coloured in the same way as the one he exhibited, were to be placed in museums, so as to be readily seen from various groups of cabinets. In these maps the names of the Regions, and numbers of the Sub-regions, were distinctly printed, so that they could be read at a considerable distance. Prof. Poulton added that the method he had described was being gradually introduced into the Hope Collections at Oxford. Mr. McLachlan stated that a somewhat similar plan to that described by Prof. Poulton for showing the geographical distribution of insects, had been adopted in the Brussels Museum by Mons. Preudhomme de Borre. Mr. W. F. H. Blandford, Dr. D. Sharp, Mr. C. J. Gahan, Mr. C. O. Waterhouse, Mr. S. Stevens,



Mr. Osbert Salvin, Prof. Poulton, and the President continued the discussion. Dr. Sharp read the following extract from Dr. Livingstone's 'Narrative of an Expedition to the Zambesi,' and stated that he was indebted to Mr. Gahan for calling his attention to it:—"We tried to sleep one rainy night in a native hut, but could not because of attacks by the fighting battalions of a very small species of *Formica*, not more than one-sixteenth of an inch in length. It soon became obvious that they were under regular discipline, and even attempting to carry out the skilful plans and stratagem of some eminent leader. Our hands and necks were the first objects of attack. Large bodies of these little pests were massed in silence round the point to be assaulted. We could hear the sharp, shrill word of command two or three times repeated, though, until then, we had not believed in the vocal power of an ant; the instant after we felt the storming hosts over head and neck, &c." Prof. Poulton read a paper entitled "On the sexes of larvæ emerging from the successively laid eggs of *Smerinthus populi*." Mr. Merrifield, Dr. Sharp, and the President took part in the discussion which ensued. Mr. W. L. Distant communicated a paper entitled "On the Homopterous genus *Pyrops*, with descriptions of two new species." The President read a paper, written by himself and Mr. J. Edwards, entitled "A revision of the genus *Æneis*," which he characterized as the most cold-loving genus of butterflies. He also exhibited his complete collection of species of this genus, which was said to be the finest in the world. A long discussion ensued, in which Prof. Poulton, Mr. McLachlan, Mr. Salvin, Mr. Bethune-Baker, the Rev. Dr. Walker, Mr. Kirby, Mr. Merrifield, Mr. Barrett, Mr. Blandford, Dr. Sharp, and Mr. Jacoby took part.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—  
*Thursday, Oct. 26th, 1893.*—J. Jenner Weir, F.E.S., President, in the chair. Mr. Frohawk exhibited a second brood of *Argynnis paphia* from eggs of var. *valesina* deposited in June, only one of the four specimens being of the female parent form. Mr. Tutt remarked that he had bred second broods of *A. paphia* and *Vanessa urticae*. Mr. South exhibited Continental specimens of *Lycæna bellargus* with its var. *ceronus*, a female, blue like the male, with fulvous spots on the upper side; *L. corydon* and its var. *syngrapha*, a female, blue like the male, with dusky margins, and a specimen with the fringes perfectly white; also specimens of *L. arion*, some of which were large in size and others dark in colour. Mr. Weir remarked that his many years' attention to the "blues" at Lewes had resulted in the detection of but very little variation. Mr. S. Stevens exhibited a specimen of *Tinea simplicella*. Mr. Hamm, long series of the two broods of *Leucophasia sinapis*, well illustrating both the seasonal and sexual dimorphism of this species; *Colias edusa* with several examples of var. *helice*, among which was a female with only the faintest trace of a spot in the black border; long series of *Melitæa aurinia*, bred from Hampshire larvæ, with captured specimens from Swansea for comparison; also a remarkable scaleless aberration (some of the Hants specimens were comparable to var. *hibernica*); a specimen of *Polyommatus phlæas* with fewer spots on the primaries than members had noticed before; bleached vars. of both *Epinephele ianira* and *E. tithonus*; a most remarkable var. of *E. hyperanthus*, in which one wing only was normal, the other three having the yellow rings on the under side much enlarged, the colour being irregularly spread over a considerable surface, and streaks protruding into the black ground colour; a var. of *Smerinthus tilia*;



a long series of *Toxocampa pastinum*; a case containing long and varied series of all the genus *Xanthia*, that of *X. gilvago* from Reading being especially noticeable; some fine *Dasycampa rubiginea* and *Cosmia paleacea*, with many other species. Mr. Carpenter, bred series of *Triphæna comes* from Aberdeen, and of *Aplecta prasina* from Essex. Mr. Enoch, a very dark female of the dark April brood of *Lycæna argiolus*, taken at Torquay by Master John Enoch. Mr. P. Bright, a gynandrous specimen of *Argynnis paphia*, the left side male, the right female; a specimen of *Ematurga atomaria*, very dark with only a few traces of the yellow markings, and another with three wings normal, the right inferior being uniformly dark; a very dark female *Stilbia anomala*; and a varied series of *Emydia cribrum*, some being banded. Mr. Adkin, the following types of variation in *Polyommatus phlæas*, taken at Eastbourne on Sept. 4th:—(1) showing the submarginal row of black spots on the primaries reduced in some specimens to minute dots; (2) showing spots large, costa and wing-rays thickly dusted with black scales; (3) discoidal spot and no. 3 of the submarginal series connected by a black streak; (4) spots showing a tendency to elongation; also a long variable series of *Boarmia repandata*, bred during August, from South of Ireland ova,—among them were examples of the *conversaria* and *destrigaria* forms. He mentioned that this was only a partial second brood, about half the larvæ being now in hybernation. He considered this remarkable, as his long experience showed this species to be most persistently single-brooded, and he had in this case taken no special care to induce the larvæ to feed up. Mr. McArthur, very dark specimens of *B. repandata* (2nd brood), bred from the same locality as the last. Mr. Carpenter remarked that he had attempted to force the larvæ of this species, but unsuccessfully. Mr. Billups, the Tsetse Fly (*Glossina morsitans*), with *Stomoxys calcitrans*, the nearest akin to it we have in this country; also the rare species of Sarcophagidæ, *Cynomyia mortuorum*, captured at Oxshott in July, 1891. Mr. Weir, *Heliconius rhea* and its mimic *Papilio pausanias*, and remarked that not only the colour of the *Heliconius*, but the shape also, were closely mimicked by the *Papilio*, in which latter respect it departed very much from the usual form of the Papilioninæ of South America. Mr. Frohawk, pupa of *Argynnis adippe*, and a discussion ensued relative to the two types of pupa noticed in the genera *Argynnis* and *Vanessa*.—H. WILLIAMS and H. TURNER, *Hon. Secs.*

November 9th.—Mr. C. Fenn, F.E.S., Vice-President, in the chair. Mr. R. Adkin exhibited a bred series of *Hypsipetes ruberata* from Sutherlandshire; also *H. sordidata* and *Emmelesia minorata* taken in Inverness. The *H. ruberata* varied from pale grey, with numerous transverse darker striæ, to light chocolate-brown, with slightly darker basal patches; whilst some were light greenish grey, with dark brown lines. Some of the *H. sordidata* were of dark mottled brown, while others were greenish. A discussion ensued concerning the food-plant of *H. ruberata*; it was stated that those bred from willow were almost invariable and of the red form, while those from alder were most variable. Mr. Carpenter, *Boarmia repandata*, bred from the New Forest, about half the brood being the *conversaria* form, but not so striking as the N. Devon race; one specimen was intermediate in colour. Mr. West, a light var. of *Abraxas grossulariata* taken at Streatham. Mr. Oldham, light forms of *Agrotis segetum* from Woodford, and dark ones from Norfolk; also a piece of ash-bark, channelled by either a *Tomicus* or *Scolytus*. Mr. Perks, several species of

Fungi, including *Agaricus ulmarius*, an edible species, from St. James's Park. Mr. Watson reported a possible second brood of *Apatura iris* in the New Forest, he having taken a full-fed larva on Oct. 7th, which pupated, and he was daily expecting the butterfly to emerge. Mr. Carrington gave a most interesting account of his recent experiences in Manitoba. He stated that the day after leaving Merville a specimen of *Vanessa urticae* appeared on deck, and continued to be seen until the day before reaching land; and that on the return voyage several species of Lepidoptera were observed, having no doubt been sheltered in hay, which formed part of the cargo. West from Quebec up to the forest region the vegetation seemed but little different from that of Europe. The most striking flower was the chicory (*Cichorium intybus*), while the ox-eye daisy (*Chrysanthemum leucanthemum*) was along the railway banks in profusion. This latter had crept for quite 200 miles into the forest region, but was only seen on the banks. Here on the Umbelliferae were seen quantities of *Argynnis*, besides many other species; and he considered these banks and the numerous station-clearings to be admirable collecting-grounds. There seemed but little life in the pine forests away from the railway track. *Vanessa antiopa* was seen here and there, and a *Papilio* was common in one place. Insects seemed little disturbed by the passing train, and a few came into the carriages. In the prairie region there was more life; Lepidoptera were less plentiful, but Neuroptera and Orthoptera were in swarms; while some of the Diptera, presumably a *Culex*, were almost intolerable from the persistence of their attacks. Messrs. Fenn, Watson, and others took part in the discussion which ensued; and a hearty vote of thanks to Mr. Carrington was unanimously passed.—HY. J. TURNER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Nov. 13th. Mr. S. J. Capper, F.L.S., President, in the chair. The subject for discussion was the Vanessidæ. Owing to the absence of Mr. C. H. Schill, who was to have given a paper on this subject, Mr. F. N. Pierce, F.E.S. (Hon. Secretary), read a few notes on the genus. There were a large number of specimens exhibited, the President showing many fine varieties from his collection, among which were the celebrated specimen of *Cynthia cardui* from the collection of the late Mr. Owen, having the white spots at the apex of the fore wing obliterated by dark scales, and blind specimens of *Vanessa io*. Mr. Harker exhibited a fine *V. atalanta*, the red border being creamy yellow. Mr. Walker exhibited his unique collection of varieties of *V. antiopa*, bred by him from Canadian pupæ. Mr. Watson, *Tenipalpus imperialis*. Mr. Scott, on behalf of Mr. H. S. Clark, a specimen of *Ophion obscurum* and *Paniscus tarsatus*, which had been sent to him as having stung a woman in Douglas, causing blood-poisoning.—F. N. PIERCE, *Hon. Sec.*

LOWER MOSLEY STREET (MANCHESTER) NATURAL HISTORY SOCIETY.—The 33rd Annual Soirée of this Society was held on October 28th, Mr. Thomas Rogers, President of the Society, in the chair. Amongst the exhibits, Mr. John Watson brought his collection of exotic Papilioninæ, consisting of upwards of 200 species. Specially interesting were fine series of *Tenipalpus imperialis*, including a dark variety of the female; bred series of the African *Orpheides demoleus*; and some very fine specimens of the N. American *Jasoniades turnus*, and its black var. *glaucus*, Linn., Other interesting species were *P. alcinous* var., from the interior of Japan (a mountain form); and a black var. of *P. paris*, with androconia on the



2nd submedian nervule of primaries, similar to that found on *P. ganesa* and others in this group. Mr. Watson also showed, on behalf of Mr. J. C. Hudson, who has for years lent rare insects to these soirées, a drawer of both sexes of *P. ascanius*, and a variety of the female; also *P. agavus* in both sexes.—HENRY HYDE.

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## RECENT LITERATURE.

*The Life of a Butterfly: a Chapter in Natural History for the General Reader.* 16mo, 186 pp., 4 plates. By SAMUEL H. SCUDDER. Henry Holt & Co., New York.

THIS charming little volume is written in a style so untechnical that the general reader, to whom it is addressed, will find no difficulty in understanding it, and will be both interested and instructed. To the British reader, even if he be a scientific entomologist, the book will be very welcome, because it brings together, in a small compass, a vast amount of concentrated information regarding *Anosia plexippus*, which, since the year 1876, has been occasionally taken in England in all of the counties having coasts on the English Channel. It must not, however, be supposed that the work deals only with *Anosia plexippus*, but, to use the author's own words, "By using a single butterfly as a special text, one may discourse at pleasure of many."

Chapter IV is particularly interesting; it treats of the vagrancy of the species. Even in America, there is strong reason to believe that it is a regular migrant north of 40°, or perhaps even further south, on the Atlantic border, and that its real home is in the tropics. Although the arrival of the butterfly in the spring has not been clearly observed, the departure in the autumn of immense flights passing southwards has been often seen.

With regard to this autumnal migration, Dr. John Hamilton, of Alleghany, Pennsylvania, says, writing from New Jersey:—"The multitude of this butterfly that assembled here the first week in September (1885) is almost past belief. Millions is but feebly expressive,—miles of them is no exaggeration." There is very little doubt that this was a genuine migration, because it is stated that "not a stalk of their food-plant (*Asclepias*) grows on the island."

In Chapter VII the subject of "Scent-scales: a question of sexual selection," is treated of. The author arrives at the conclusion that androconia are organs for the production of scent, and that the sense of smell is in the antennæ of Lepidoptera. This chapter is particularly valuable to purely British entomologists, because in works on our indigenous Lepidoptera the existence of these organs is generally ignored.

Chapter IX is a good lesson in classification, dealing with the correlation existing between the abortive legs of the male and the hanging of the chrysalis in the Nymphalidæ.

Chapter X is devoted to nomenclature, a subject in which Mr. Scudder has no superiors, and is therefore highly instructive. It appears that the conservatism of the American entomologists causes



them to persist in naming the species in question *Danaïs archippus*, notwithstanding the fact that that old generic name was given to a group of quite another family of butterflies, and that the Limnain division of the Euploëinæ has long been divided into some 25 genera, of which the American genus *Anosia* forms one.

Upon the whole the book may be recommended to all who cultivate a taste for philosophical Natural History. The book is most appropriately dedicated "To the foremost-student of the life-histories of American butterflies, William Henry Edwards, of West Virginia."

J. J. W.

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*Our Household Insects: an Account of the Insect-Pests found in Dwelling-houses.* By EDWARD A. BUTLER, B.A., B.Sc. (Lond.). Pp. 344. London: Longmans, Green & Co. 1893.

A COLLECTION of articles previously published in 'Knowledge.' The book is divided into seventeen chapters, each of which is well written, and bears evidence of much careful investigation into the habits of the objects dealt with. A large amount of information from various trustworthy sources is also incorporated. It would be difficult to mention any insect occurring in dwelling-houses that is not referred to, and all that is useful to know concerning it fully expounded. Many well-executed wood-cuts and seven photographic plates give additional value to the book, which we can heartily commend to the notice not only of the general reader but also of the entomological student.

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## OBITUARY.

JAMES BATTY, of 65, Fawcett Street, Sheffield, died on October 14th, aged 62 years. He was an excellent type of the working-man Lepidopterist, and the last surviving practical worker of the old Sheffield Entomologists' Club, which comprised many excellent naturalists thirty or forty years ago. Batty had an excellent knowledge of larvæ, and was the discoverer of the larva of *Tapinostola elymi* and *Celæna haworthii*. He was a regular correspondent with the late Mr. Wm. Buckler and the late Rev. Joseph Hellins, and used to keep them well supplied with material for description. He was also a good Micro-Lepidopterist, and has left a fairly typical collection of Tortrices behind him. Apart from these he kept no collection, having sold his some years ago, I believe to Mr. J. B. Hodgkinson. He then gave up his hobby till a few years ago, when he recommenced to exchange for species he either had not seen before or was not familiarly acquainted with. Two years ago he started his small collection of Tortrices. He will be much missed by the writer, as they have been hundreds of excursions together.

A. E. H.

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T. R. BILLUPS, F.E.S.

W. LUCAS DISTANT, F.E.S., &c.

EDWARD A. FITCH, F.L.S., F.E.S.

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“By mutual confidence and mutual aid  
Great deeds are done and great discoveries made.”

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“The path of discovery is often a very tortuous one, and when a discovery can only be made by a series of observations, the fact that these observations are made singly, and only form a series when collected together, is often a real difficulty in the path of the philosophic student. Some try, indeed, to generalize from every individual fact, but surely they impede their own progress thereby, and nothing can be more distressing than to see great powers misapplied, in the vain attempt to construct theories, for which the facts are not accumulated.”—STANTON.



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## VARIETIES OF *ARGYNNIS EUPHROSYNE* AND *MELITÆA AURINIA*.

By F. W. FROHAWK, F.E.S., AND R. SOUTH.



FIG. 1. *Argynnis euphrosyne*, ♂ ab. FIG. 2. *Melitæa aurinia* (*artemis*), ♀ ab.

FIG. 3. *Melitæa aurinia*, ♂.

FIGURE 1.—*Argynnis euphrosyne*, ♂ ab., captured May 5th, 1893, in Lancashire, by Mr. T. Baynes, in whose collection the specimen now is.

Fore wings pale fulvous, blackish at the base; there is an elongate black spot at the outer extremity of discoidal cell, one about the middle of the cell, and one below this last in the submedian interspace; the submarginal area is traversed by a series of six blackish spots, the second to fifth of which are more or less elongated, and the sixth double and ill-defined; marginal line black, preceded by black triangular spots on the nervules. Hind wings: basal two-thirds black, the



centre clothed with long pale fulvous hairs; outer third pale fulvous, intersected by black nervules. Under surface of fore wings paler than above, especially at apex and along outer marginal area; spots in cell as on upper surface, but on the submarginal area the spots are obscure reddish brown, the two upper ones most conspicuous and projected to outer margin; the marginal spots are absent: hind wings pale buff, the outer third limited by a waved reddish line; the nervules are bordered with reddish on this portion of the wing, and there is a silver patch in each interspace; in the centre of the wing is a large elongate silver spot, which is only separated from the fourth internervular patch by the reddish wavy line.—R. S.

FIGURE 2.—*Melitæa aurinia* (*artemis*), ♀ ab., bred from Penarth pupæ, May, 1893. In F. W. Frohawk's collection.

Upper side: basal half dark smoky brown; apical portion of primaries pale straw-yellow; semitransparent in certain lights. Under side: primaries with a submarginal pale straw-yellow band; the usual tawny orange colouring is much deeper in tone, inclining to russet-brown; the secondary on right side has the usual tawny orange submarginal band entirely missing, the series of black spots only remaining on the creamy white ground; on the left side the band is slightly indicated; the five basal creamy white spots found in normal specimens are absent in this variety, and partially replaced by black markings.—F. W. F.

FIGURE 3.—*Melitæa aurinia*, ♂ ab., bred May, 1893, from Penarth pupæ. In Mr. J. H. Carpenter's collection.

Upper surface: primaries smoky black, without any cream-coloured markings, only the tawny orange spots present; secondaries black, the submarginal band and median markings in bold contrast to the black ground. Under side: resembling normal specimens, excepting the basal area of the secondaries, which are somewhat similar in variation to fig. 2, but in a more marked degree, exhibiting four large deep black spots.—F. W. F.

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## ON THE VERTICAL DISTRIBUTION OF THE BRITISH LEPIDOPTERA.

BY W. HARCOURT BATH.

THE study of the vertical distribution of the Lepidoptera in this country is a by-path of Entomology which has hitherto been very sadly neglected.

So long ago as 1865, Mr. Jenner-Fust published, in the 'Transactions of the Entomological Society of London,' an account of the geographical distribution of the Lepidoptera

occurring in the British Isles, on similar lines to those laid down by Mr. H. C. Watson, in his excellent work on the geographical distribution of the flowering plants, well known to British botanists as the 'Cybele Britannica.' The author, however, does not treat whatever of their vertical distribution (which is no doubt owing to the paucity of data bearing upon the subject), nor has anyone else attempted to do so since, that I am aware of.

Now vertical distribution is, in my opinion, in every particular as important as geographical distribution, for it estimates the affinities existing, on the one hand, between the lowland species occurring in this country and their relatives in more elevated areas in the South of Europe; and, on the other hand, between the montanic forms found in these isles and their representatives occurring at still higher altitudes in the alpine regions of the central and southern parts of the Continent, as well as at lower levels in arctic and subarctic latitudes.

Vertical distribution, besides, gives a better index as to the range of temperature and other climatic phenomena which each species can endure than mere geographical distribution is capable of doing in anything like the same area. For instance, there are greater differences of temperature found in ascending a hill only some 3000 feet in altitude, than there exists between the Scilly Isles and the extreme north of the Shetland Isles, which are distant from one another about 700 miles. On the average, the distance afforded by two degrees of latitude (*i. e.*, 139 miles), either in a northerly or southerly direction, is capable of producing only a difference in the mean annual temperature of about one degree Fahrenheit, which a trifling ascent or descent of a hundred yards will do upon the side of any hill. This is well exemplified in Mr. H. C. Watson's celebrated 'Cybele Britannica' previously alluded to.

Although Mr. Watson's geographical divisions (employed by Mr. Jenner-Fust) are in the main probably the most natural provinces which could possibly have been decided upon, his vertical divisions or zones do not seem to be so well suited for studying the ascending limits of the Lepidoptera in this country as some which I shall suggest.

The brothers Speyer, in their great work on the distribution of the Swiss and German Lepidoptera, define five vertical or ascending zones as follows:—

1. *The Lowland zone.* This includes all the valley region up to the limit to which the walnut and sweet chestnut will grow. In the southern alps it terminates at about 3000 feet above the level of the sea; in the northern limestone alps it is somewhat 500 feet lower; and 1000 feet lower still in Central Germany (in the region of the Schwarz Wald, or famous Black Forest).

2. *The Hill zone*, which is the next in the order of ascending,



terminates respectively in the south alps, the north alps, and Central Germany, at the heights of about 4500, 4000, and 3000 feet, and is the highest limit at which the oak, beech, and birch trees will flourish.

3. *The Lower Alpine zone.* This is the great region of coniferous trees, and runs up to the height of 6000, 5500, and 4500 feet in the three mountain districts mentioned above. In Norway it terminates at the height of from 700 to 3000 feet, according to the latitude.

4. *The Upper Alpine zone.* This belt extends above the pine trees to the additional height of 1500 feet, and is the region of the rhododendron, great tracts of which occur in the Swiss alps, making this part of the mountains quite bright with their millions of blossoms in the summer time. In Scandinavia this belt is very vaguely represented, the width being often reduced to very trivial dimensions.

5. *The Snow zone.* In this zone only small alpine plants and lichens flourish, and it extends up to where the first great patches of the everlasting snow are encountered, which is sometimes several hundreds of feet beyond the theoretical line of congelation.

Now, in deciding the limitations of the zones in the British Isles, I have been guided largely by the preceding plan, and have, as far as possible, given the exact British equivalents for each of them. My proposed list is therefore as under:—

1. *The South Coast zone.* This belt coincides with the lower portion of Speyers' lowland zone, and corresponds to the limit in Europe to which the grape-vine will flourish, which terminates polewards at the annual isotherm of 50° F., or at about latitude 50° on the Continent. In the British Isles it includes all the southern coasts of England and Wales, from the neighbourhood of Liverpool in the west to Harwich in the east, as well as all the southern portions of Ireland. Its southern limits are in the Scilly Islands, which possess a mean annual temperature of 53° F., and it includes the whole of the south coast up to the average height of about 300 feet above the sea-level. It constitutes the northern limit of the *Clematis vitalba*. Several Austral species of Lepidoptera are found exclusively in this region; but the only species of butterfly which can be said to belong to it alone is the little Lulworth "skipper" (*Hesperia actæon*). I think it is necessary to provide this zone, as an unfair value would, if it was omitted, be attached to the one which immediately follows in the order of ascending, and with which it would otherwise be incorporated.

2. *The Lower Hill zone* corresponds to the remaining half of Messrs. Speyers' lowland zone, and terminates in this country at the annual isotherm of 45° F. It constitutes by far the most extensive belt in the British Isles, embracing the greater part of the country within a moderate vertical distance of the sea-level,



north, or above that, of the preceding zone. To it accordingly belongs the great bulk of our indigenous Lepidoptera. In the South of England this zone extends to the height of about 1800 feet above the sea-level; but in the North of Scotland it sinks to as low as 300 feet. No very familiar or typical botanical productions may be enumerated as belonging exclusively to the Lower Hill zone in this country.

3. *The Upper Hill zone* is the British equivalent for Speyers' 2nd or Hill zone, also of Watson's super-agrarian zone, and terminates at the isotherm of 41° F. It constitutes the highest (or most northern) limit to which grain can be cultivated, and it is likewise the point at which the oak and the common bracken (*Pteris aquilina*) cease to grow. In the Grampian mountains it terminates at the height of 1800 feet above the sea-level, but in the Snowdonian range of North Wales it is somewhat 1000 feet higher. By reason of its greatly reduced extent in this country, this zone only contains a small proportion of the species of Lepidoptera found in the preceding zone. *Erebia epiphron* (var. *cassiope*) is the sole species of butterfly which exclusively inhabits this zone, and it is the only true alpine species of Rhopalocera which we possess in the British Isles. It does not, however, here ascend, comparatively, to anything like the height that it does in the mountains of Central Europe, where it exists in Speyers' pine or Lower Alpine belt.

4. *The Lower Alpine zone* corresponds to the zone of the same name defined by Messrs. Speyer, but from its very circumscribed extent it only possesses comparatively a small number of species of Lepidoptera, although several species of butterflies are known to breed within its boundaries. In England and Wales it only contains a few mountain summits within its limits from the height upwards of about 3000 feet, but in Scotland it constitutes a much more extensive area in the Grampians, where it rises to the height of about 3300 feet, terminating at the annual isotherm of 36° F. This zone constitutes the highest limit to which the heaths will grow, *Calluna vulgaris* being the last species to succumb to the increasing cold. In Switzerland, Germany, and Scandinavia, it is the highest altitude at which the various species of pine will survive, but the Scotch fir (*Pinus sylvestris*), which only grows to the height of 2100 on the Grampians (and therefore only just enters the present belt), is of no value in estimating the British equivalent for the zone in question, as this tree is known not to reach to nearly so great an altitude as several other species of the Coniferæ, to which it belongs. I have, therefore, been compelled to adopt the common heath as the typical plant of this belt or region.

5. *The Upper Alpine zone* is of still more limited extent than the preceding one, containing only the summits of the highest of the Grampian mountains (from about 3300 feet above the sea-

level). It terminates theoretically at the height of 4500 feet, or the theoretical line of congelation. Ben Nevis, the highest mountain in the chain, however, falls short of this altitude by about 100 feet. This belt constitutes the 4th or Upper Alpine zone of Messrs. Speyer, and is characterised in this country by possessing a flora composed only of small alpine plants and lichens, there being nothing in the Grampians corresponding with the lovely rhododendrons of the Swiss alps. The 5th or Snow zone of Messrs. Speyer is not represented at all in the British Isles, this being the region between the theoretical and the actual snow-line of the high mountains upon the Continent.

(To be continued.)

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### EXTRACTION OF MOTH-GREASE BY ETHER.

By H. GUARD KNAGGS, M.D., F.L.S.

SOME months since there appeared in your pages an interesting discussion on the removal of grease from moths, in which Messrs. Christy, Arkle, Anderson, and the Rev. Joseph Greene took part; and it seemed to me that a considerable advance had been made by the former gentlemen towards thoroughly extracting the grease without showing any external blemish. But while agreeing with Messrs. Christy and Arkle as to the efficacy of repeated baths of benzine or benzoline to eradicate every particle of grease, thus rendering the insect safe for the future, I would submit that there is a fluid still better adapted for the purpose, namely, ether. Methylated ether is about the same price as benzoline, and consequently considerably less than benzine collas. It has fully twice the insect-grease-solving power of the latter, but its great merit consists in the rapidity with which it volatilises, leaving the pile of the fur in its natural position, and thereby giving a freshened appearance to the specimen.

*Breaking off the bodies* is a matter of judgment decided by the size of the species, extent of grease, age of the specimen, &c.; it is also a matter of convenience and an economy of time and material, more especially with the larger species from the size of *Noctuæ* to *Acherontia*, for when the abdomina alone are detached they take up comparatively little space, and consequently a larger number of them may be operated upon simultaneously, the bath receptacle need not be so large as with entire insects, and the quantity of detergent fluid may be greatly diminished, but not stinted. With regard to the time for commencing operations, it seems to me that we should never begin until the insects are thoroughly set and dry, even though signs of grease may be present; but that, in a reasonable time after that, the



sooner any examples exhibiting abdominal stains, or indeed any of the numerous species which are bound to go wrong, are taken in hand the better.

A *small scoop*, of a size proportionate to the insect to be operated upon, will be found advantageous in the case of specimens which are recent or comparatively so. Its use is to make a channel from the thoracic to the tail-end of the abdomen, for which purpose it is inserted into the thoracic end, pushed as far as it will go, and then gently withdrawn again, the object being to give the ether free access to the whole length of the interior. This procedure may not be absolutely necessary, but it greatly expedites the removal of the objectionable matter. Note.—Of course the greater part of the contents of the abdomen might be extracted by the scoop alone, without exhibiting any outward sign, but, as the ether will do the work rapidly and completely, there is no occasion to take the trouble. Old bodies with hard interiors may be drilled from diaphragm to anal end to admit the fluid.

As a *bath receptacle* nothing can be better than a bottle of the shape recommended for benzine by Mr. Christy, but for ether a *perfectly-fitting stopper* is a *sine qua non*. This, in my plan, is fitted with an oblong cork stage, of a width to enter the mouth of the bottle easily, and of a length shaped to fit the internal diameter loosely; it is loaded with two strips of lead, and a small cork float is attached, by a tether of about half-an-inch, to one of the ends by means of pack-thread. Cork is used (*pace* Mr. Anderson), because it is, in my opinion, important to keep the insects and bodies from touching one another or the stage. As for the rest, pin the specimens, &c., on the stage (the ticket numbers may be written in ordinary ink, and if they are submerged even while the writing is wet, and kept in the fluid for months, they will take no harm), then lift the cork stage by the float, and lower it gently into the bottle, till its base rests flatly on the bottom, cover the insects, &c. with ether, replace the stopper, and put away in a cool place, for warmth does not suit ether at this stage of the proceedings.

The *duration of the bath* will depend upon the size of the insects and bodies to be operated on; if large, as from an average *Noctua* or *Bombyx* upwards, they may be left from six to ten days; if smaller, half the time may be enough. At the end of that period open the bottle, grasp the cork-float with a pair of forceps, gently lift out the stage, and lay it, loaded side down, on a plate; then pour off the liquor into a narrow-mouthed bottle and cork tightly, wipe out the bath-bottle, replace the stage, replenish with fresh ether, stopper, and put away for another period, by which time the cleansing will probably be completed; but it is advisable to give a third short soaking as a rinse to wash off any surface grease. Note.—If the fluids of the



first and second soakings are bottled together, and allowed to settle, the clear top liquid may be used again and again as a *first bath*; that of the third bath may be put aside for a future *second bath*.

*The drying process* may be commenced as soon as we are satisfied that the insects, &c. are thoroughly cleansed, as evidenced by the non-discoloration and absence of turbidity of the last bath, and by the "feel" of the interiors of the bodies as we draw the scoop along their sides. Lift out the stage, and *at once* place it in a thorough draught, such as that caused by raising the lower sash of a window a few inches; or, better still, find a warm corner with a temperature not over 80°, where there is no flame; or have a foot-warmer of hot water ready, lay the stage upon its flat surface, and fan away in order to accelerate evaporation, for it is upon the quickness of the drying that the future fresh appearance of the specimen depends. Absorbent powders will not be required unless the insects are taken out of a greasy medium. Perhaps from the first to the last of the process described a week or even a month may elapse, but the aggregate of the actual attention required may hardly exceed half-an-hour, with which short expenditure of time dozens of specimens can be rendered safe from any return of grease for ever, or at any rate till they perish from lapse of time, or other cause. The foregoing remarks apply more particularly to entire insects of small or moderate size, and to abdomina of all sizes.

*The wings and thoraces* of the larger species—too big for the bottle—are the next things we have to consider, and these require a different treatment to that already mentioned. As far as the former are concerned, if the thoraces are not bad, the best thing to do seems to be to put a quantity of one or other of the powders generally used for the purpose into a saucer, and, having shaped the surface to fit the insect, press the latter on it; then saturate it thoroughly by dropping ether upon it, and quickly cover over with more powder, very gently tap the bottom of the saucer against the table in order to cause the powder to settle closely round the insect, and also to render the head of the pin visible, and put away for twenty-four hours. With two or three repetitions of this procedure the specimen will usually be found free from grease; the powder may be shaken and blown off, and, after a brush up with a camel's-hair pencil, blowing the while, the fur of the specimen may be freshened up by a light spraying with ether, while rapid evaporation is kept up by fanning. It is surprising how quickly and easily greasy butterflies may be furbished up in this way. But beware of a flame or naked light while at this work, for the injunction about benzine and inflammability applies with even greater force to ether. A spray apparatus, the bellows part of which will be useful for pre-

serving larvæ, according to Lord Walsingham's plan, can be procured at a very low figure, if we are content with German manufacture.

*Thoraces*, if very bad, present a deplorable appearance; if the grease has extended to the pin, a green salt is generated, which so distends and distorts the shape of the thorax that the insertions of the fore and hind wings part company. This is still more exaggerated and unsightly if the specimen happens to have been pinned towards one side. If such an example be immersed in ether, the green salt and grease surrounding the pin will be quickly dissolved, and the specimen will probably float off the pin. In the case of a common species thus affected, it would be sheer waste of time and talent to attempt a cure, but with a rarity it might be worth while, after cleansing it, to detach the abdomen, with hind wings attached, and try the operation of excising the bulging portions of the thorax, in order to approximate the fore and hind wings into something like their natural position; and no doubt, with skill and care, such a specimen might be made to *look* decent.

*A word of warning.* — "Never mix." If you begin with benzine, keep to it; if with ether, ditto. Do not start with one and finish with the other, or you will regret it.

Should any one wish to know more about ether, I shall be happy to enlighten him to the extent of my ability. The present seems a fitting opportunity to again thank those gentlemen who have so kindly furnished me with the material which has enabled me to complete this paper. I dare say there are,—in fact, I feel sure there must be,—many imperfections in the methods here advocated; but I much doubt if a better fluid than methylated ether can be found for the purpose—at the price. I *do* know of other fluids which may be able to give even ether odds in a grease-cleansing match, though most of them are too costly for the purpose—but there! Methylated ether is good enough for the present, and I am morally sure that if any of your readers will only give it a trial, they will be well pleased with the result.

Camden Road, N.W., December, 1893.

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## ON A COLLECTION OF LEPIDOPTERA FROM THE SCILLY ISLES.

BY ROBERT ADKIN, F.E.S.

CONTRIBUTIONS, however small, towards a knowledge of the fauna of an isolated district are always interesting. I was therefore glad to accept the invitation of my brother, Mr. Banaiah W. Adkin, to inspect and make notes upon a collection of Lepidoptera that he had made in the Scilly Isles, for the most part



during a summer holiday extending over portions of the months of June, July, August and September, 1893; but for the purposes of these notes some few species that he had obtained during shorter visits in other years are incorporated.

The Scilly group consists of some half-dozen larger islands, the largest of them being about three and a-half miles across at its extreme points; about thirty smaller ones, and innumerable rocks and ledges; and are composed entirely of a coarse type of granite, a continuation of that running through Devon and Cornwall. They are situate 27 miles W.S.W. from the Land's End, and are contained in an area of some 30 square miles of sea-room. The climate is mild and humid, and the range of temperature small, the difference between the mean summer average (58° F.) and that of winter (45° F.) being only 13 degrees; but by reason of their exposed situation, the islands are subject to rapid changes of weather and frequent storms; and it is probable that only the half-dozen larger ones, of which by-the-by five only are inhabited, afford sufficient protection to shelter anything beyond sea-birds and lichens, both of which, however, abound throughout the group.

St. Mary's, the island on which the collection now under notice was chiefly made,\* is much the largest of the group; it consists of a mainland connected by a sandy isthmus, on which is situated the town, with an almost barren hill known as "The Garrison," the whole comprising just over 1500 acres. The main part of the island consists chiefly of elevated rocky land, in many parts bare of any vegetation, attaining at the highest point some 158 feet above sea-level, and intersected by two swampy valleys, the larger of them, which contains a good-sized fresh-water pond, crossing the island from east to west, the other running in a southerly direction and meeting it at about its centre. The only trees on the island are some fruit orchards, frequently surrounded by wych-elms, and a few small, rather sickly-looking poplars, recently planted in some of the more sheltered parts. An industry, that has of late assumed very considerable proportions, is the raising of early flowers (*Narcissus* and the like) for market; these are grown in fields, chiefly surrounded by hedges composed of *Escalonia macrantha* and species of *Euonymus* and *Veronica*, while others are divided by stone walls. The uncultivated portions of the higher lands, where

\* Occasional visits were paid to several of the other islands, namely, Annet, St. Agnes, Sampson, Bryher and St. Martin's, and many of the smaller islands, all of which are similar in their natural features to St. Mary's; also to Treco, where is the residence of the proprietor of the islands, T. A. Dorrien-Smith, Esq., and his gardens, in which subtropical and even tropical shrubs and plants, such as palms, aloes, camellias, prickly-pear, and many others, flourish side by side with the common furze; but in no case was any species observed that was not met with on St. Mary's, nor did any of those taken exhibit forms varying from those of that island.



sustaining any vegetation, are covered with masses of gorse, bramble, and heather; while along the cliff-edges thrift is abundant, and *Silene* scarce and local. The valleys contain large quantities of rushes (*Arundo*?), coarse grass, a few low-growing plants, and many very fine examples of the royal fern (*Osmunda regalis*).

Under such conditions it is not surprising to find that Lepidoptera are by no means common in the islands, and that one has to work hard to get together even a small collection; but the isolated position of the place and the peculiar climatic conditions, already referred to, would lead one to expect a considerable percentage of variation among the species occurring there, but in this the collection is, with one or two exceptions, very disappointing.

In the following list, where no comments follow a species, it may be assumed that it was comparatively common and the specimens taken quite typical:—

*Pieris brassicæ*, *P. rapæ*, *P. napi*.

*Epinephale ianira*, the commonest and perhaps the most interesting species met with. A well-defined local form, in which the brown colour of the wings is richer and more velvety than usual, somewhat approaching that of *Erebia athiops*, and the fulvous patch brighter. In the males this patch is large, and in the extreme examples of the female it also extends, in a subdued form, over a considerable portion of the basal half of the fore wings, and is carried as a broad band across the hind wings. The black spot near the apex of fore wings is large and not infrequently bipupillate, and in several specimens there is a distinct lobe on its lower margin; some specimens have also a fulvous ocellated spot near the anal angle of hind wings.

*Vanessa atalanta* and *V. urticæ*. *V. cardui*, common in 1892, not seen in 1893.

*Chrysophanus phlæas*, not particularly common.

*Lycæna icarus*. Females bluish, closely resembling the Sussex forms.

*Macroglossa stellatarum*.

*Zygæna filipendulæ*, common.

*Lithosia quadra*, eight specimens taken in 1893, not previously observed.

*Euchelia jacobææ*.

*Arctia caia*.

*Porthesia similis* (*auriflua*), one of the commonest species.

*Bombyx quercus*, fairly common.

*Bryophila muralis* (*glandifera*). *B. perla* was not met with.

*Acronycta rumicis*.

*Leucania vitellina* (2). *L. extranea* (1). (See Entom. xxvi. 327).  
*L. impura* (2). *L. pallens* (3).

*Xylophasia monoglypha* (*polyodon*).

*Cerigo matura* (*cytherea*).

*Mamestra brassicæ*, not common.

*Apamea didyma* (*oculea*), common and variable as usual.

*Miana strigilis*. One ordinary and one with a decided pinkish hue.  
*M. bicoloria* (*furuncula*), fairly common.

*Caradrina quadripunctata* (*cubicularis*).

*Agrotis puta*. *A. suffusa*, scarce. *A. segetum*. *A. saucia*, four only.  
*A. lunigera*. *A. exclamationis*, not common. *A. tritici*, not common.

*Noctua triangulum* (1). *N. xanthographa*; all the specimens taken were of a reddish shade.

*Triphena pronuba*, and its var. *innuba*, equally common. *T. comes*, not particularly common; all those taken were of the ordinary clay-coloured type, several of them having the transverse lines dark brown and well defined. The legend that specimens closely approaching var. *curtisii* were taken here therefore still remains unconfirmed.

*Amphipyra tragopogonis*, very common.

*Mania maura* (1).

*Xanthia fulvago* (*cerago*) (1).

*Dianthæcia nana* (*conspersa*), from seed-heads of *Silene* collected in 1891 an interesting series was bred, the prevailing characteristic being the extension of the white markings of the central area of the fore wings towards the inner margin, the extreme examples being distinctly of the "compta" type. *D. capsicola*, one bred with the above.

*Phlogophora meticulosa*, very common.

*Hadena trifolii* (*chenopodii*), very common. *H. oleracea*, all the specimens were of a mottled reddish form.

*Plusia gamma*, generally common, but not met with in 1893 until the middle of July, when it suddenly became abundant.

*Uropteryx sambucaria*, fairly common.

*Gnophos obscuraria* (1).

*Hemithea strigata* (*thymiaria*), fairly common.

*Acidalia bisetata*. *A. scutulata*, not common. *A. marginepunctata* (*promutata*), ordinary grey form. *A. imitaria*, not common.

*Abraxas grossulariata*.

*Emmelesia decolorata*, fairly common.

*Eupithecia pumilata*. *E. coronata* (1); and two other worn examples probably representing *E. satyrata* and *E. absinthiata*.

*Melanthia bicolorata* (*rubiginata*) (6), rather large, costal patch inclined to form broad median fascia as in var. *plumbata*.

*Coremia unidentaria*, very few seen.

*Camptogramma bilineata*, very common. The specimens taken have a general tendency to a darkening of the ground colour, and dark transverse lines and a widening of the white lines, giving the insect a very bright appearance.

*Cidaria truncata* (*russata*), a few worn examples were taken, apparently of a somewhat dusky form.

*Endotricha flammealis*.

*Sphaleroptera ictericana* (1), and *Sciaphila conspersana* (6), bred from seed-heads of *Silene* in 1891.

Lewisham, November, 1893.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from vol. xxvi. p. 345.)

*SPILOSOMA LUBRICIPEDA*, *Esp.*—Everywhere common throughout Ireland. The only variety I have noticed is where the dots upon the fore wings are strongly marked, and more or less confluent. One taken by Mr. Dillon, in Co. Galway, is the finest I have seen, and the spots have coalesced into a bar.

*SPILOSOMA MENTHASTRI*, *Esp.*—Extremely common, more so than the preceding. Sometimes obscures the windows of light-houses on the S.W. coast. In moth-traps is a perfect pest, disturbing and crowding out better species. The spots are sometimes very numerous and large, but sometimes almost obsolete.

The var. *ochracea* sometimes occurs. Roches Point, Cork; and about Belfast (*W.*) not uncommon.

*HEPIALIDÆ.*

*HEPIALUS HUMULI*, *L.*—Common everywhere, both on the bleakest coast-line and inland. Variable in size; and in the coloration of the female.

*HEPIALUS SYLVANUS*, *L.*—The only report of the capture of this species has been sent me by Mr. Dillon, who took two specimens at Clonbrock. Mr. Birchall's record in the Co. Wicklow proves to be erroneous.

*HEPIALUS VELLEDA*, *Hb.*—Very widely distributed throughout Ireland, but somewhat localised. Mr. Watts thinks that those about Belfast district are smaller and brighter than English specimens. My experience is that they vary much, sometimes having the brown a rich russet hue, and sometimes blackish.

The var. *gallicus*, *Ld.*, often almost as common as the type. I have noticed the female of this variety of very great size, and reaching 2 inches 3 lines in expanse. Whether this is always the case or not seems worth enquiry.

Localities: Derry, Donegal, in suitable localities, Belfast, very common (*W.*); Carlingford and Armagh (*J.*); Tyrone and Monaghan, occasional; Cromlyn and Killynon, Westmeath; Farnham, Co. Cavan; Dublin and Wicklow, often plentiful; southwards in Wexford, Waterford, Cork, and Kerry, in varying abundance; about Ennis, Co. Clare; Ardrahan and Clonbrock, very plentiful (*R. E. D.*); Ballynahinch, Connemara, Co. Galway; Co. Sligo, &c. Abundant and similarly distributed as the former. I have noticed it flying in the sunshine.

*HEPIALUS HECTUS*, *L.*—Very local, but widely distributed. I have taken it in a great many counties, but it is easily over-



looked. Belfast (*W.*), abundant; in Wicklow on the little Sugar-loaf Mt., abundant (*S.*); Killynon (*Miss R.*), Cromlyn (*Mrs. B.*), Westmeath; near Cork; Killarney, Kenmare, Co. Kerry; Renvyle and Ballynahinch, Connemara, at Dalyston, Loughrea, and at Clonbrock (*R. E. D.*), Co. Galway; Altadiawan and Gallagher Wood, Tyrone, abundant. I observed this species in the act of copulating, and as it has been stated that the female flies up to the male, I append the note I made in my diary on the occasion, so that the action above referred to is not invariable. "June 28th, 1888. Saw a female in the herbage shaking her wings incessantly, and at length one of the males hovering near flew down and found her, and immediately copulated, hanging motionless head downwards suspended by the anal extremity, and the vibrations of the wings of his mate ceased. Also saw the males hovering numerously about, and noticed apparently one male fly against another, when they fell together in the herbage."

#### COSSIDÆ.

*COSSUS LIGNIPERDA*, *Fb.*—A local species, not often met with in Ireland. Wicklow, apparently scarce (*B.*); Leixlip (*S.*), Co. Dublin; Charleville Forest near Tullamore, King's Co.; also at Curraghmore, Co. Waterford; and abundant in certain demesnes in Co. Carlow. It is said to infest the trees at L. Inagh, Connemara.

*ZEUZERA PYRINA*, *L.*—The only Irish locality is Clonbrock, Co. Galway, where two or three specimens have occurred in the garden (*R. E. D.*). Mr. Sinclair's former record proved to be erroneous.

*MACROGASTER CASTANÆÆ*, *Hb.*—Mr. Dillon has a single specimen, which fell into a boat which was being pushed through the reedy margin of a lakelet near Ahascragh, Co. Galway.

#### COCHLIOPODIDÆ.

*HETEROGENEA LIMACODES*, *Hufn.*—Mr. Dillon took a specimen, in 1892, at Clonbrock, flying at dusk, and again two similarly in 1893; altogether two females and one very dark male. I have never captured this moth; but Newman seems to say that the females were not taken by him in flight. Probably they only fly at dusk.

#### LIPARIDÆ.

[*LIPARIS SIMILIS*, *Fues.*—It is curious that Mr. Birchall reports this species and *L. chrysorrhœa* as common in Ireland. I think it must have been a slip of the pen, as they have never turned up in my experience, nor reported by correspondents, with this single exception.]

*LEUCOMA SALICIS*, *L.*—Mr. Birchall reports this also common. The only locality I know is near Ahascragh, where Mr. Dillon reports that he has taken a good many specimens.

[*OCNERIA DISPAR*, L.—Mr. Birchall turned out large numbers of the larvæ among *Myrica gale* on the Killarney bogs. I also did the same on the hawthorns of Col. Cooper's deer-park at Markree Castle, Co. Sligo, which seemed to thrive. No subsequent records of the experiments are available.]

*DASYCHIRA FASCELINA*, L.—Three larvæ were taken by me on heather in the Bog of Allen near Toberdaly, King's Co., in 1891. All three were stung, but I preserved them for reference.

*DASYCHIRA PUDIBUNDA*, L.—This seems to be confined to the southern half of Ireland. It is common in parts of the Co. Galway, at Ardrahan (*Miss N.*), and Clonbrock, a few (*R. E. D.*), and a larva at Galway (*A.*); Glandore, abundant (*D.*). I have taken the larvæ near Kenmare, Co. Kerry, where Miss Vernon found it not infrequent, and near Cappagh and Lismore, Co. Waterford; Mallow (*Bw.*) and Brandon, Co. Cork (*L.*); Co. Wicklow, Tinahely, not rare (*Bw.*), and Glendalough (*K.*).

*ORGYIA ANTIQUA*, L.—This insect never appears to be so abundant in Irish localities as it is in England. I have seen it at Rathmines and Kingstown near Dublin, and in sparse numbers it occurs in widely separated localities. Killynon (*Miss R.*) and Cromlyn (*Mrs. B.*), Westmeath; New Ross (*B.-H.*), Co. Waterford; Killarney (*K.*). At Clonbrock it is very numerous; and in the Belfast district it is generally distributed, but not common (*W.*).

#### BOMBYCIDÆ.

*TRICHIURA CRATÆGI*, L.—Killarney; but seems a scarce insect (*B.*).

*PÆCILOCAMPA POPULI*, L.—Distributed throughout Ireland, and fairly abundant in some localities, as at Howth, Co. Dublin, and Favour Royal, Tyrone. Occasionally at Cromlyn, Westmeath (*Mrs. B.*); Tullamore, King's Co.; Lough Arrow (*Miss ff.*) to Roscommon; Clonbrock (*R. E. D.*), Co. Galway; two near Derry (*C.*); Shanes Castle, Antrim (*Bw.*); Armagh (*J.*); Drumreask, Monaghan; Tinahely, Co. Wicklow (*Bw.*)

(To be continued.)

### HYPENA DAMNOSALIS, Wlk.

By JOHN B. SMITH.

IN the 'Entomologist' for November, 1893, p. 311, Mr. Butler, in an extremely courteous way, calls attention to a supposed mistake of mine *in re* the above species. Mr. Butler is good enough to make excuses for me, suggesting that I was hurried, and also confused by the "Walkerian arrangement, still more confounded by subsequent accessions," and for his kindness I thank him.

Referring to my original notes, I find under *Hypena damnosalis*:—"Type. The specimens are in part *perangulalis*, in part *deceptalis*. The typical specimen is *perangulalis*." I am entirely familiar with *caducalis*, which is a common species with us; and also with *perangulalis* in all its forms, and am not ready to admit that my note is an error. Mr. Butler is probably right in suggesting the identity of *perangulalis* and *deceptalis*, and I stated this same opinion in my Catalogue as follows:—"As a matter of fact, I believe that the two names refer to one species only."

*Perangulalis* is an exceedingly variable form in size, in colour, and to an extent in wing form. It occasionally becomes fully as dark as *caducalis*, which it then resembles quite strongly. I was myself misled at first, and referring to a series of figures which I had with me, I find that I had written *damnosalis* on one of them and had crossed it out, and had labelled another "*deceptalis, perangulalis, damnosalis*," which accords with my written notes. I cannot accept Mr. Butler's excuse that I was hurried, for in the Deltoid series I was especially well provided with figures to assist me in recognising species, and I was particularly anxious to clear up the synonymy. There is the possibility that I mistook the type specimens; but I am hardly ready to admit it as very likely.

No one who has not seen large series, can have any idea of the extent of the variation in some of our American Deltoids, and I have puzzled over the species of some genera for hours before I was able to decide on the essential characters useful for tabular synopses.

Rutger's College, New Jersey, U.S.A.

## NOTES AND OBSERVATIONS.

NOTES ON CHALCIDIDÆ.—Schletterer (Berl. Ent. Zeit. xxxv., 1890, p. 208) gives *Leucospis rufonotata*, Westwood, as a synonym of *L. gigas*, Fabr. This is erroneous, *rufonotata*, Westw., being identical with *miniata*, Klug (Symb. Phys. xxxvii. f. 1). By the rule of priority, *rufonotata* is, therefore, a synonym of Klug's insect. In the same work, Schletterer (p. 175) gives a reference to *L. biguetina*, Jurine, as 'Ent. Monthly Mag.'; this should be 'Ent. Mag.' *Leucospis gibba*, Klug, is a variety of *biguetina*, Jur., the characters said to distinguish it not being of sufficient importance to justify the species. *Leucospis* may be divided into two sections, founded on the length of the ovipositor; *brevicauda*, Fabr., *ornata*, Westw., *cupreoviridis*, Westw., and *ignota*, Walker, are types of the section in which the ovipositor only extends to the apex of the first segment of abdomen.—JOHN W. SHIPP; Oxford University Museum.

CATALOGUE OF IRISH LEPIDOPTERA.—My friend Mr. Johnson, of Armagh, who kindly supplied me with a list of his captures in Ireland,



publishes a notice (Entom. xxvi. 318) of some additional localities I have omitted. May I explain that when I refer to *Argynnis paphia*, for instance, as "existing in almost all the wooded districts," a few localities only are added to illustrate the universal nature of its distribution. *Epinephile hyperanthes*, *Cænonympha typhon*, *Macroglossa stellatarum*, and *Chærocampa elpenor* are also cases in which it is wholly impossible and quite unnecessary to specify more than a few localities where, for instance, the insect in question is especially common, or to show northern or southern range, or for other analogous reason. I am very glad to hear of *Smerinthus ocellatus* at Armagh. *Trochilium crabroniformis* at Armagh I am responsible for, and not Mr. Johnson, as he states. In Mr. Harcourt Bath's notice of *Vanessa c-album* (Entom. xxvi. 338) a remark occurs which illustrates some of the difficulties which attend a task of expurgation. It commences with the assertion that "in Ireland this butterfly is also very rarely observed." This of course implies that it has been taken here at least twice. Can Mr. Harcourt Bath supply me with any authentic records? The 'Supplementary List' of Birchall contained the one referred to by Newman, namely, of a specimen, thought to be of this species, seen flying at Powerscourt by Mr. Crewe, when in the company of Mr. A. G. More, then Curator of the Royal Dublin Society's Museum, who is a most competent entomologist. Mr. More, many years ago, assured me that the distance was too great for identification, and that he himself took the insect for a very tattered specimen of *Vanessa urticae*, and I made a memorandum of his statement accordingly. *Syrichtus malvæ* is another error in the same Supplement, which crept into it on the authority of Mr. W. F. Kirby, then of the Dublin Museum, who, finding subsequently that the specimen (contained in a collection now in my possession) was almost certainly English, published a contradiction and withdrawal. I hoped that it would not have been necessary for me to explain seriatim the grounds on which I have omitted many species from the Irish Catalogue. They are set forth generally in the preface (Entom. xxvi. 73), but if any can be reinstated by any author writing on the Irish fauna, it would be always satisfactory to have a verification of the record supplied.—W. F. de V. KANE; Drumreaske House, Monaghan, Dec. 4th, 1893.

ABERRATION OF *THECLA RUBI*.—Mr. R. E. Dillon, of Clonbrock, Ahascragh, Ireland, has kindly sent me for examination a very remarkable example of *T. rubi*. The specimen, which was taken in the beginning of June last, is in rather poor condition, and the fore wings appear to be rather narrower than in typical specimens. The upper surface of all the wings is fuliginous brown, and the under surface is entirely without the usual green coloration; the white macular line or band (in normal specimens rarely well defined, and frequently only represented by one or two spots) is very distinct and regular. The sexual mark is hardly paler than the ground colour, and very obscure. Sometimes in this species the green colour of under surface gives place to a bronzy brown, but this is the only instance I am aware of in which all trace of green is absent.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

## OCCURRENCES OF SECOND BROODS OF LEPIDOPTERA IN DEVON DURING 1893.

NAME	1st brood	2nd brood	Remarks on 2nd brood
<i>Leucophasia sinapis</i> .....	4th May	scarce .....	very much smaller.
<i>Arynnus selene</i> .....	12th May	plentiful ..	smaller and lighter in colour.
" <i>euphrosyne</i> .....	20th May	scarce .....	do.
<i>Pararge egeria</i> .....	7th April	abundant ...	no difference in size; specimens darker.
" <i>megera</i> .....	15th May	abundant ...	do. more ♀ than ♂.
<i>Lycana icarus</i> .....	2nd May	abundant ...	do.
<i>Macroglossa stellatarum</i> ...	3rd May	few .....	more numerous in autumn.
<i>Arctii villica</i> .....	9th May	abundant ...	no difference.
<i>Acidalia marginepunctata</i>	30th April	common ..	on the Devon coast, between Seaton and Sidmouth, the Portland form is plentiful in April and May; 2nd brood scarce. On the Dartmoor range the ordinary form only is taken; no spring brood; July brood abundant.
<i>Melanippe fluctuata</i> .....	20th April	very common	much smaller.
<i>Coremia designata</i> .....	21st April	common ..	smaller. [varieties or forms.
<i>Cidaria russata</i> .....	16th April	common ...	no difference.
" <i>silacea</i> .....	20th April	numerous...	autumn brood seemed to contain more I am not sure if this would be considered a 2nd brood or a continuation of the 1st brood, but I have never met with it so late before, nor did I observe any between June and September; smaller in size.
<i>Larentia pectinaria</i> .....	30th May	abundant ...	very few ...

**ACHERONTIA ATROPOS.**—I had three larvæ of *Acherontia atropos*, nearly full-grown, sent to me, on July 12th, by Mr. Daw, of William Street, Slough. They were found feeding on *Lycium barbarum*, growing against the wall, and partially covering the sitting-room window of his house; one was injured by a fall, and died in a few days. Two went down, the first on July 18th, the other on the 21st. Both produced moths, one on Sept. 20th, and the other on the 28th—fine and perfect specimens. The first measured  $4\frac{3}{4}$  in., and the last to appear 5 in., from tip to tip of wings, when set. It would be interesting to know if the larvæ have been found in a similar situation in other parts of the country. The first example of *A. atropos* I had in my cabinet was found at Slough on Nov. 6th, just over thirty years ago, and so well is it preserved that it might easily be mistaken for one captured within the last two years.—J. B. WILLIAMSON; Farnham Common, Slough, Bucks.

**EMERGENCE OF THE SEXES OF HIMERA PENNARIA.**—On April 20th I found a batch of eggs of *Himera pennaria* on an oak-trunk. These hatched in due time, producing forty-four larvæ, of which forty-three pupated, all going down within three days. The following are the dates of emergence, with the sex:—Sept. 20th, two males; 22nd, two males; 23rd, three males; 25th, three males; 28th, two males; 29th, one male. Oct. 1st, one male, two females; 2nd, two females; 4th, one male; 5th, one male, three females; 8th, two females; 9th, one male, one female; 14th, two males, two females; 15th, one male, three females; 16th, two males, one female; 17th, two females; 19th, two females; 20th, one male. Total, twenty-three males and twenty females. The males were all, without exception, well-formed and perfect insects. Of the females, twelve were complete cripples. In eight the wings were fully expanded, but in four of these lacked strength and substance, only four of all the females being really perfect.—N. F. SEARANCEKE; Mitcheldean, Gloucester, Nov. 7th, 1893.

**REMARKS ON THE SEASON OF 1893.—EARLY APPEARANCES.**—Owing to the almost tropical weather, instances of early appearances have been far too numerous to mention here; on the whole, species have appeared fully a fortnight earlier than usual, in many instances three weeks, and in some exceptional cases even a month in advance of ordinary seasons.

**MELANISM.**—Instances of melanism in specimens captured this season have not been up to the average; a very large number of the *Noctuæ* and *Geometræ* (especially the former) which occur in the neighbourhood of York are more or less subject to melanism. A full list of the species which show this tendency, and have come under my observation, will be given at some future date.

**SALLOWS** were very unproductive, being well out by March 10th, and doubtless on this account the generally seductive blossoms failed to attract the *Tæniocampidæ* in anything like their usual numbers.

**SUGAR.**—Whilst we have had very few poor nights at sugar, the quantity has rarely been great, and the quality invariably poor. The reason for this has been, in my opinion, not the counter-attraction of



honeydew, at which I have noticed very few moths, but the general scarcity of *Noctuæ*.

IVY-BLOSSOM.—On Sept. 30th I had my first night at ivy-blossom, in the Westwood Beverley, where the ivy is especially abundant, clinging in wild luxuriance around the fine old hawthorn trees, which here form such a conspicuous feature of the landscape; but, although the night was favourable from a meteorological point of view, the blossom fine, large, and plentiful, and the odour perceptible even to human nostrils, our would-be guests failed to put in an appearance, except by ones and twos,—quite different to the nights at ivy-blossom one often reads about. A friend of mine, who has worked ivy on numerous occasions this season, informs me that he has had almost uniform bad luck.

GEOMETRÆ have been on the whole very scarce, and nothing at and after dusk uniformly unproductive. In the daytime, at rest on tree-trunks, palings, &c., but especially the former, *Tephrosia biundularia* and its var. *delamerensis*, *Venusia cambricaria*, *Asthena blomeri*, *Lobophora lobulata*, *T. punctulata*, *A. sylvata*, *Abraxas ulmata*, &c., have been fairly common; whilst *H. marginata*, *Thera variata*, and *F. piniiaria* could be obtained in abundance by means of the beating-stick.

SCARCITY OF LEPIDOPTERA.—I think this has been due in a great measure to the extraordinary abundance of their natural enemies, ichneumons, wasps, dragonflies, and bats, which, together with swifts, nightjars, and other insectivorous birds, have, thanks to the fine weather, been enabled better to follow their work of destruction; and lastly, but by no means least, to the great drought which has prevailed; these causes having also undoubtedly tended to minimise the number of larvæ, which have been unusually scarce.

SECOND BROODS.—The following species of *Noctuæ*, which are not usually double-brooded with us, have this year been either double-brooded or partially so:—*Leucania pallens*, *Acronycta psi*, *A. rumicis*, *Noctua plecta*, *N. c-nigrum*, *Agrotis segetum*, *A. suffusa*, *Hadena suasa*, and *H. oleracea*.—W. HEWETT; Howard Street, York, Nov. 11th, 1893.

MACROGLOSSA STELLATARUM AND COLOUR.—Unusual summers seem to bring out unusual insects. During the wettest summer I ever remember, eleven specimens of *Vanessa antiopa* were taken in Berwickshire; and during the early part of another hot summer, twenty-three examples of *Colias edusa* were captured in the same county. I greatly hoped that the species would breed there, and be found again in other years; but from that day to this I have never heard of either having been taken or even seen again. The past summer may be said to have been a great one for *M. stellatarum*. Several of our members have taken the species, and it has been seen or captured in many other places. I have twice seen it, but did not effect a capture on either occasion; and I am glad I did not, as I learned more of the habits of this species during the quarter of an hour I watched it than I had done from all that is written about it in the books that I have read. I was working in a garden one day, when, happening to look up, I saw something flash past me and fly away over the wall. I guessed at once what it was, and thought it was likely to come back again, which it did; and this time I was more fortunate, as I was able to get quite close behind

it. The wings were vibrating so quickly that you could scarcely notice them moving at all, and the long hairs on its body stood straight out all round along each side and across behind the body, making it more easy for the wings to bear it up. It did not alight upon a flower, but just inserted its long trunk while on the wing; and as it flew from flower to flower the trunk protruded an inch or more. The most curious thing was the way the moth selected flowers of a particular colour. There were two rows of *Violas* about ten yards long, one on each side of a walk three feet wide; the insect at once chose a sort of cream- or straw-coloured one, known as "Pilrig-park," and completely ignored all the other colours, such as blue, purple, black, and yellow. It went to work in a very systematic way, beginning at one end of the walk, where the *Viola* "Pilrig-park" was growing, and going over most of the flowers, but never even trying one of which the edges of the petals were turned up, showing that the flower had served its purpose and was beginning to decay; but it went over every flower that was fully open, or even beginning to open; and after it had been along the whole line it turned back and tried them again, but quickly recognised the fact that there was nothing more to be got out of them. The eye could scarcely follow the insect now, as, after it had tried three or four flowers, it made two or three wide circles; then it tried the common marigold (*Caltha segetum*), but this did not suit it at all, as it only sampled one flower; then it made another circle, flew over the wall, and I knew I had seen the last of it. Now, what can there be about this particular *Viola* more than any other to attract *M. stellatarum*? The purple, lilac, and black shades seemed all equally good, and yet the insect never touched one of them. There is no doubt that the "Pilrig-park" variety has a vigorous constitution, coming earlier into bloom than many other *Violas*, and also holding on longer; but even this very thing would give it its robust habit. All the flowers the insect visited would be cross-fertilised, and if I had gathered the seed from these cross-fertilised flowers they would have had a more vigorous habit than the parent plant, or the self-fertilised flowers which the insect rejected. I know that *M. stellatarum* visits single geraniums, too; but here there was a whole bed of double ones, and it never even looked at them. Mr. Speirs caught a specimen while at his window-box of pale pink single geraniums; and I saw one at a scarlet variety, also in a window. (Abstract of a paper read before the South of Scotland Entomological and Natural History Society, October 5th, 1898, by Mr. SHAW, President.)

THE MELANISM CONTROVERSY. — Mr. Dale, quoting my statement that I do not know of any *Rhopalocera* in the British Islands remarkable for melanochoic tendencies, seems to overlook that I refer to *Rhopalocera* only, and that my remarks were *apropos* to the suggestion that in countries with defect of sunshine (such as the British Islands) dark coloration would be advantageous, and consequently fostered by natural selection. That theory rests on a wholly different basis from that underlying the well-known phenomena of adaptive coloration, which therefore were not alluded to. My limited knowledge of the *Rhopalocera* certainly, so far as it goes, quite bears out Mr. Dale's opinion that the *Rhopalocera* are not without examples of pale



varieties on chalk and limestone soils. But I can only call to mind a few such. By Mr. Dale's reference to instances of animals adopting a white uniform in snowy regions, I gather that he rather dissents from Lord Walsingham's theory. It is worth while mentioning, in relation to the subject, that I have often noticed the rapid absorption of the sun's rays by a dark or strongly-coloured insect, strikingly shown when one settles with expanded wings upon the snow; for if they rest any time, the snow melts beneath them, and they perish benumbed by the cold. I have watched this result, and have taken some good species thus upon the Swiss alps.—WM. FRAS. DE V. KANE; Drumreask House, Monaghan, Ireland.

DISTRIBUTION IN BRITAIN OF VANESSA C-ALBUM.—I was much interested in reading Mr. Harcourt Bath's remarks on the range of this species in Britain (Entom. xxvi. 338), and note that its occurrence in Scotland appears to be doubtful. Barron Wood, in Cumberland, is distant from the Scotch border about fifteen miles as the crow flies, and it was there that my father took a hybernated specimen in April, 1835, when he was collecting *Brepbos parthenias*. No other specimens of *V. c-album* were seen there until 1846, when some numbers occurred. A man, now living at Carlisle, was with me at the time, and we found a great many chysalids on the large scabious (*Knautia*), and the butterflies in plenty. A few were found some two or three years later, but, so far as I know, none since. It seems strange that some butterflies, common in adjoining counties, do not appear able to establish themselves in the district referred to, e.g., *Leucophasia sinapis*, *Gonepteryx rhamni*, *Argynnis adippe*, *A. paphia*, *Pararge egeria*, &c.—J. B. HODGKINSON; Preston, December 4th, 1893.

OBSERVATIONS ON VANESSA C-ALBUM.—Since penning the remarks which appeared in the last issue of the 'Entomologist' (xxvi. 338–342) I have had serious misgivings as to whether the conclusions arrived at therein, concerning the dimorphic tendencies of the insect in question, are correct. Upon a careful re-examination of the long series of this species in my possession, I am strongly tempted to think that what I considered to be the typical form of the first flight are merely hybernated specimens of the autumnal brood. But if this is so they must retain their colour and fresh appearance remarkably well; and what is more misleading still, is the fact that they co-exist with the fulvous form. However, I will await the verdict of those who have had greater experience with the butterfly than myself. If my conclusions were incorrect no harm can have been done; and the same object will have been gained by the publication of the epistle which I had in view when I penned it, if it is the means of directing the attention of other students to the various problems connected with the economy of *V. c-album* which require a satisfactory solution.—W. HARCOURT BATH; Birmingham, December 23rd, 1893.

RELAXING INSECTS.—1. If small, lay them between fresh cabbage-leaves for a day or two. 2. Fill three-parts full a wide-mouthed bottle or jar with laurel-leaves, young, and gathered when free from damp. The cork stopper must be air-tight and well sealed. Pin the insects to the bottom of the cork for two or three days. This method does



well for Noctuas. By using the above methods no "mould" need be feared. In the two following, this fungus enemy is certain to appear after some hours, whether the water used be hot or cold. Therefore add a few drops of carbolic acid, which will also arrest decomposition, and be certain death to "mites" as well. 3. Use a corked, zinc relaxing-box. Damp—but only damp—the cork. Drop on the cork six drops of carbolic acid. 4. Fill a wide-mouthed, well-stopped bottle or jar, three-parts full with *damp* sand. Drop on the sand carbolic acid, twelve or fifteen drops to a pint (four gills) of sand. Place a layer of cotton-wool on the sand, and lay the insects on the cotton-wool. It is well to measure the carbolic acid—a drop or two over will not matter. Too much will retard relaxation, probably because the oily nature prevents the damp from rising. Nos. 3 and 4, especially No. 4, are invaluable for the largest-sized insects (or, indeed, any other). These may be safely left for a week or a fortnight until thoroughly flexible. Lepidoptera, after relaxing, should be exposed in the room for a few minutes to dry the wings. In changing the pin press the thorax, from below and upwards, with the thumb and forefinger, then downwards with the use of a setting-needle. After setting, expose the insects for a quarter of an hour in front of a moderate fire. J. ARKLE; Chester.

[For relaxing insects on a larger scale, see Entom. xxv. 119.—Ed.]

SPILOSOMA MENDICA VAR. RUSTICA.—Referring to Mr. Kane's notes (Entom. xxvi. 344) on *S. mendica* var. *rustica*, as probably I was the first to rear this variety from ova, it may be well to record that my capture of the female alluded to took place in 1885. From these ova a most beautiful and varied series of males was bred, fifteen distinct and very striking varieties of which are still in my collection. The ova from which Mr. Adkin and Mrs. Hutchinson bred their specimens were deposited in 1886 by the progeny of the female taken in 1885. The female *rustica* is larger than English specimens I have taken in Durham and Dorset, and more constant in the number and disposition of the spots. I have not observed *S. mendica* here, although *S. fuliginosa* is not uncommon.—H. McDOWALL; Nashville, Howth, December 4th, 1893.

BLEACHED PATCHES ON WINGS OF BUTTERFLIES.—Amongst a few pupæ of *Vanessa atalanta* of the second (or third) brood (the last emerged November 27th), one met with an accident that I thought must be fatal. It hung to the cover of a jar, and in replacing the cover, rather a heavy one, this pupa was carelessly pressed between the cover and the lip of the jar, remaining so for twenty-four hours. The lip of the jar, some tenth of an inch thick, left a deep impression across one of the wing-covers. This got shallower, but remained evident till the time of emergence, and crossed the red band of the upper wing. The butterfly nevertheless succeeded in emerging perfectly, except a white bleached patch across the red band of the upper wing, and some less evident change of the same character on the lower wing. Remembering that *E. ianira* presents these bleached patches perhaps more frequently than any other butterfly,—they are indeed common in that species,—it seems to me that a similar cause, pressure on the pupal wing-cases, is here the explanation also. *Ianira* pupates in a flimsy

cocoon low down towards the roots of the grass, just at the period when it is most rapidly growing—you should begin mowing two days before *ianira* emerges—hence it must be very liable to injury and pressure by stems of plants rapidly growing, or, more probably, bent down by wind or other accident. I suppose it is agreed that these bleachings are pathological, and probably due to pupal injury. This note is to suggest the nature of the injury.—T. A. CHAPMAN; Firbank, Hereford.

A NEW LOCAL ENTOMOLOGICAL SOCIETY.—A number of entomologists met at the house of Mr. Eales on November 30th, and formed a Society called “The Carlisle Entomological Society.” Twelve members were enrolled, officers were chosen, and a number of rules were made. Mr. Christopher Eales was elected President; and Mr. John Buckle, Secretary and Treasurer. The meetings are being held at the house of Mr. Eales for the present. We will forward the reports of the meetings each month.—JOHN BUCKLE, *Secretary*. [We have very great pleasure in publishing the above announcement, and wish the newly-formed Society every success.—ED.]

PROPOSED LIST OF ENTOMOLOGICAL SOCIETIES, &C., IN GREAT BRITAIN.—We believe that the time has arrived when a list of Entomological Societies, and of Natural History Societies and Field Clubs, of whose members a greater or lesser number are interested in Entomology, would be both interesting and valuable. We therefore ask Secretaries of all such associations to be good enough to forward us particulars of their respective Societies or Clubs. Information under the following heads is all that is really necessary, but any other items of general interest might be added:—1. Name. 2. (a) Date of meetings; (b) where held. 3. Date of foundation. 4. Number of members. 5. Annual subscription. 6. Officers and Council for 1894.

THE BURNEY COLLECTION (HETEROCERA).—Particulars of the prices realised for the butterflies were given in a former note (Entom. xxvi. 359); the present account deals with the Sphinges and Bombyces. Two examples of *Sphinx pinastri* and seven of *Acherontia atropos* sold for 24/-; whilst one specimen of the former and six of the latter, comprising another lot, realised 22/-. There were ten specimens of *Charocampa celerio*, and seven of these were disposed of at about 10/- each; one, with two examples of *Deilephila galii*, for 24/-; another, also with two *D. galii*, for 22/-; and one, with three *D. galii*, for 30/-. Two of the original specimens of *D. euphorbiae*, bred by Mr. Raddon from Devonshire larvæ, commanded £6 6s. and £6 16s. 6d. each; whilst a third example, “taken in the Isle of Man by Chas. S. Dewhurst, July 15th, 1868, teste G. B. Hodgkinson,” only brought in £3 13s. 6d. Six *D. galii* produced 32/6. Of the eleven specimens of *D. livornica (lineata)*, one was knocked down for 26/-, and another for 35/-; two were sold for 30/-, and the other seven hardly averaged 8/- each. Two lots of *Sesia*, each including one example of *andreniformis* and two of *scoliformis*, went for 32/6 a lot; two other lots of *Sesia*, comprising among other species *scoliformis* (4), each fetched 20/-. Four *S. sphegiformis* and two *S. asiliformis* were sold for 42/-, and a similar lot for 35/-; whilst three *S. sphegiformis* and one *S. asiliformis*, ex. coll. Standish, fetched two guineas. *Zygæna exulans* and *Z. nubi-*



*gena* produced about 6d. apiece. There were three lots of *Lithosia caniola* and *L. molybdeola (sericea)*, six examples of one and five of the other, with a few *deplana*, &c., in each lot; these realised 35/- 26/- and 22/-. *Deiopeia pulchella*, of which there were ten specimens, were disposed of in couples at from 20/- to 32/6. Two examples of *Callimorpha hera*, "taken in 1884 by Brook and Waring at Star Cross, Devon," made 35/-; and a black variety of *C. dominula* sold for £10. A specimen of *Nemeophila plantaginis* var. *hospita*, together with a variety with almost obsolete markings, fetched 35/-. Varieties of *Arctia caia* were not either numerous or very remarkable, but a very pale specimen found a purchaser at 35/-; and another pale example, lotted with a dark one, made two guineas. The old fen form of *Ocnieria dispar* ran up the price of the respective lots, in which two female examples were included, to 25/- and 35/-. *Lalia cænosa* were sold in pairs at 25/- 20/- 22/- 26/- and 26/-, and two very nice males also went at last quotation. *Lasiocampa ilicifolia* (12 specimens) made from 15/6 to 18/- each. *Drepana harpagula (=sacula)*, of which there was a series of seventeen specimens, were mostly sold three in a lot, and realised prices which gave an average of 6/- per specimen. *Dicranura bicuspis* (15 examples) sold at 20/- to 24/- per pair, and males at 14/- to 18/- per brace; but the two examples of *Glyphisia crenata* only brought in 8/- and 15/-. The five specimens of *Notodonta bicolor* offered were disposed of at one guinea to £2 5s., males, and a female realised £2 10s. Three examples of *N. trilophus (tritophus)*, offered singly, were sold at 24/- 30/- and 12/- each, and a fourth specimen, included in a lot with *N. dictæa, dictæoides*, &c., fetched 14/-.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

THE LATE REV. H. BURNEY'S COLLECTION.—I may mention that the two specimens of *Luperina guenéei* in this collection were from me. Three specimens of this insect were captured on the same day, and the third example was sent by me to Miss C. Sullivan, of Fulham. A fourth specimen, which I possess, was formerly in the collection of the late J. F. Brockholes, and no doubt he took it very near the place where the others were found. I was surprised to find that *Heliothis scutosa* was not down in the catalogue of this sale. Mr. Burney had an example of the species from me, and this specimen was well known to many, and was described and commented on by my esteemed friend Mr. C. G. Barrett (Ent. Mo. Mag. xiv. 67). I may add that if I can give particulars of any of the other rarities that were in this collection I shall be very pleased to do so.—J. B. HODGKINSON; Preston, December 14th, 1893.

MORE GREASY MOTHS WANTED.—As there are still some points in connection with this subject which I am anxious to clear up, I shall feel greatly obliged to anyone who will kindly furnish me with more greasy moths, especially goat-moths or hawks of this season's breeding or capturing.—H. G. KNAGGS; Camden Villa, Lennard Road, Folkestone.

ERRATA.—Entom. xxvi. p. 349, line 8 from top, for "enlared" read "enlarged"; p. 355, line 9 of note on *Zygæna meliloti?* for "country" read "county"; p. 356, line 23 from bottom, for "The male is figured" read "This mark is figured."



## CAPTURES AND FIELD REPORTS.

INSECTS AT LIGHT DURING 1893. — During the past year I have been working light pretty systematically, and the results may be of interest to entomologists in general. It was not until the end of June that I looked for insects at electric light. There are only two large globes here, which are situated about forty yards apart, and are almost in the centre of the town. Having, however, commenced to work electric light, I included these in my nightly rounds, giving them particular attention, and staying sometimes as late (?) as half-past one or two o'clock in the morning. From eleven to twelve seemed about the most profitable hour. My reward was the capture of the following in more or less abundance, and in more or less bad condition, between June 30th and October 30th :—*Smerinthus populi* (3), *Sphinx ligustri* (saw 1), *Nola cucullatella* (2), *Lithosia lurideola* (1), *Arctia caia*, *Porthesia similis*, *Orgyia antiqua*, *Trichiura cratægi* (1), *Bombyx neustria* (several), *Uropteryx sambucaria* (common), *Rumia luteolata*, *Selenia bilunaria* (juliana), *Eugonia alniaria* (common), *E. fuscantaria*, *Himera pennaria*, *Amphidasys betularia*, *Boarmia gemmaria*, *Acidalia virgularia*, *A. aversata* (common), *Halia vauaria*, *Abraxas grossulariata*, *Larentia didymata*, *Eupithecia succenturiata*, *E. rectangulata*, *Hypsipetes sordidata*, *Melanippe fluctuata*, *Camptogramma fluviata* (1), *Cidaria associata*, *Cilix glaucata* (several), *Phalera bucephala*, *Lophopteryx camelina*, *Notodonta dictæa*, *Bryophila perla* (common), *Acronycta tridens*, *Leucania conigera*, *L. lithargyria*, *L. pallens*, *Nonagria lutosa* (fairly common), *Gortyna ochracea* (1), *Hydræcia micacea*, *Axylia putris*, *Xylophasia monoglypha* (common), *Neuronia popularis* (3), *Luperina testacea* (very common), *Mamestra persicariæ* (excessively abundant in July), *Apamea didyma*, *Miana bicoloria*, *Caradrina alsines*, *C. taraxaci*, *C. quadripunctata*, *Agrotis puta* (2), *A. segetum*, *A. nigricans*, *A. tritici*, *A. aguilina*, *Noctua augur* (common), *N. plecta*, *N. c-nigrum* (any number), *N. xanthographa*, *Triphana comes*, *Mania typica*, *Anchocelis pistacina*, *Xanthia gilvago*, *X. flavago*, *Calymnia affinis*, *Hecatera serena*, *Folia flavocincta*, *Cleoceris viminalis* (?), *Phlogophora meticulosa*, *Hadena trifoliæ*, *H. oleracea*, *Plusia chrysis*, *P. iota*, *P. pulchrina* (1), *P. gamma*.

Besides the above, I have taken, mostly flying towards the light :—  
Coleoptera : *Pterostichus nigrita*, *Amara tibialis*, *Creophilus maxillosus* (several), *Aphodius rufipes* (common). Hymenoptera : *Formica rufa* (several), *Aphion luteus* (common).

In my diary I find the following note under September 7th :—" *Noctua c-nigrum* is now going off. It has been a perfect pest, often four or five, sometimes more, round the light at a time. After a little practice, however, one can distinguish them by their flight, and, when caught, by the habit they have of running very fast up the net. They settle anywhere on the lamp, near the lamp, and on the ground, windows, or masonry." I would be much obliged and interested if lepidopterists in other parts of the country would inform me whether their notes as regard this moth are identical with my own. All local collectors have had the same experience. *Noctua c-nigrum* has by no means been confined to electric light, having been taken at street-lamps, sugar, ivy, honeydew, among low plants, and, indeed, by every conceivable method, and in every possible situation, by which and in which moths are taken. The first specimen emerged from pupa on the 15th of May, and the insect continued to be present with hardly a break until the 9th of October, when I took my

last specimen at electric light. There appear to be two varieties (?) of this moth; the ground colour in one is almost, and in dark specimens quite, black; the other, which I take to be the type, has invariably a brown tinge throughout. Whether this variation is merely sexual distinction or not I have not had the opportunity of ascertaining.

I have also taken the following Lepidoptera at lamps, both street and indoor, during the past season:—*Nola cucullatella*, *Spilosoma lubricipeda* and *S. menthastri* (common), *Porthesia chrysorrhæa*, *P. similis*, *Leucomia salicis*, *Orgyia antiqua*, *Bombyx neustria*, *Lasiocampa quercifolia* (1), *Rumia luteolata*, *Selenia bilunaria*, *Himera pennaria*, *Biston hirtaria* (a few), *Amphidasys strataria*, *A. betularia*, *Hemerophila abruptaria*, *Boarmia gemmaria*, *Hemithea strigata* (1), *Acidalia virgularia* (common), *A. aversata* (common), *Halia vauaria*, *Hybernia rupicaprararia* (common), *H. marginaria*, *Anisopteryx ascularia* (common), *Cheimatobia brumata* (Oct. 24th), *Oporabia dilutata*, *Eupithecia succenturiata*, *E. innotata*? *E. subnotata*? *E. vulgata*, *E. absinthiata*, *E. rectangulata*, *Melanippe fluctuata* (very common), *Anticlea badiata*, *A. nigrofasciaria*, *Coremia ferrugata*, *C. unidentaria*, *Cidaria miata* (several), *C. immanata*, *C. dotata*, *Chesias spartiata* (several), *Drepana binaria*, *Ciliix glaucata*, *Phalera bucephala*, *Notodonta dictæa*, *Asphalia ridens* (2), *Bryophila perla* (common), *Leucania conigera*, *L. pallens*, *Hydracia micacea*, *Neuronia popularis*, *Luperina testacea* (several), *Mamestra persicariæ*, *Miana strigilis*, *Caradrina morpheus*, *Agrotis suffusa*, *A. nigricans*, *Noctua augur*, *N. c-nigrum* (common), *N. xanthographa* (one of them I took at the oil-lamp on the Great Eastern, while the train was in motion, between Harwich and Manningtree), *Amphipyra tragopogonis* (several), *Taniocampa gothica*, *T. incerta*, *T. stabilis*, *Orthosia lota*, *Anchocelis pistacina*, *Scopelosoma satellitia*, *Xanthia flavago*, *X. gilvago*, *X. circellaris*, *Phlogophora meticulosa*, *Euplexia lucipara*, *Hadena oleracea*, *Gonoptera libatrix*, and *Plusia gamma*. Coleoptera; *Serica brunnea* (several), *Aphodius fætens* and *A. rufipes* (common). Hymenoptera: *Ophion luteus*? (in plenty).

The prevalence of *Agrotis puta* this year is very remarkable. My friend Rev. J. H. Hocking says, with Mr. Newman, that he has taken it commonly "in his garden," at Copdock, about four miles out; and I myself have taken it both at electric light and ivy in September.—CLAUDE MORLEY; High Street, Ipswich, November 3rd, 1893.

COLLECTING IN SURREY.—This year has, as far as my experience goes, been a very marked contrast as compared with last, save, perhaps, the "sallow blooming," which with me was particularly favourable. On March 5th I noticed that theallows were already out, and promising well for a good "draw." Next evening I started out, with sheet and pill-boxes, to the attractive tree. As I anticipated, moths were there right enough, and plenty of them. *Taniocampa instabilis*, *T. cruda*, *T. gracilis*, and of course *T. gothica*, all showed up well; I also descried a few *Scopelosoma satellitia*, and some very dark *Cerastis spadicea*. On the 7th the results were similar, but with the addition of *T. populeti*, a species new to me. All through the week I had very favourable nights, and secured three more *T. populeti*, all of which were in very fine condition. The total number of species I noticed at allows was eleven, which comprised, in addition to those enumerated above, *T. munda* (which is, as a rule, rare in this neighbourhood), *Anisopteryx ascularia*, and *Pachnobia rubricosa*. Some of the latter were very beautiful and of a very fine deep red colour. In the



meantime, imagos from pupæ of *Saturnia carpinii* (= *pavonia*), received in the autumn from the North, were emerging daily; but they were not nearly so fine as I have had them; one specimen is much darker in ground colour than usual. The early Rhopalocera I have already referred to (Entom. xxvi. 199). May 11th being a beautiful bright day, I started off to my favourite hunting-ground at Oxshott, in search of *Nemeobius lucina*. After a couple of hours' searching, I managed to find the "colony" in one of the remotest corners of the wood, called "The Prince's Covers." I was unable then to take more than a couple of specimens, as I had already filled my boxes with other species, the best of which were two *Drepana hamula* and one *Macroglossa bombylifformis*. Eventually I completed my series of *N. lucina*. Amongst other insects that I have taken this year at Oxshott are—*Macaria liturata* and *Bupalus piniaria* in profusion, *Geometra papilionaria*, *Drepana falcula*, *Bapta temerata* and *B. taminata*, both of which are, however, to be found more commonly in Ashted woods, some five miles distant; *Lycæna ægon*, and *Ellopiæ fasciaria*. Of insects taken more in my own immediate neighbourhood, I may mention that formidable insect (in the larva state) *Cossus ligniperda*. Out of one tree I took no fewer than thirty healthy larvæ, and have repeatedly taken one or two out of various other trees. *Pericallia syringaria* occurs here every year, though sparingly. The same remark also applies to *Pterostoma palpina*, which comes to light in June. I was much pleased on turning up *Phorodesma bajularia* this summer; I should have thought this a most unlikely insect to occur here, as there are very few oaks indeed about this place, the predominating tree being the elm (*Ulmus campestris*).—A. J. KAYE; Worcester Court, Worcester Park, Surrey, October 20th, 1893.

COLLECTING AT WICKEN.—On July 15th to 24th, in company with Mr. H. Robson, I had the pleasure of re-visiting the Fen, and although the nights, on the whole, were very unfavourable for attraction by light, we managed to make acquaintance with a few of the Fen species. We had neither of us seen *Papilio machaon* at home, and were naturally anxious to obtain a series of this grand insect. Although plenty of specimens were seen, only a small proportion were captured, owing to the wind, and the majority of those secured were in poor condition. However, ova and young larvæ (mostly just hatched) were readily obtained, but those about full-fed were infrequently met with. For light we only had two good nights, one of which was spoilt by heavy rain. We were very much surprised that the lamp attracted so few Bombyces, for we expected that *Bombyx neustria* and *Odonestis potatoria* would be quite a nuisance. Sugaring in the lanes was fairly successful, but the flowers of the rush were decidedly more attractive. The following were among the species taken:—*Smerinthus populi*, *Bombyx neustria* (2), *Odonestis potatoria* (2), *Arctia caia*, *Spilosoma fuliginosa* (2), *Nudaria senex*, *Lithosia lurideola* (*complanula*), *L. griseola*, *L. stramineola* (1), *Epione apiciaria*, *Acidalia immutata*, *Cidaria testata*, *Pelurga comitata*, *Hypsipetes sordidata* (*elutata*), *Simyra venosa*, *Leucania impura*, *L. impudens* (*pudorina*), *Calamia phragmitidis*, *Apamea leucostigma* (*fibrosa*), *Cosmia affinis* (2), *Amphipyra tragopogonis*. With the exception of *Papilio machaon*, larvæ were not at all plentiful, and were hard to find. By searching, a few were obtained of the following species:—*Smerinthus ocellatus*, *Chærocampa elpenor*, *Macroglossa stellatarum*, *Saturnia pavonia* (*carpini*), *Dicranura vinula*, *Bombyx rubi*, and *Simyra venosa*. A journey to Tuddenham was a failure entomologically—only a few larvæ in



Pods of *Silene inflata* (I hope some may turn out *Dianthæcia irregularis*), and two imagines of *Acidalia rubricata*. I hear on good authority that the draining of Wicken Fen is again in contemplation. If such should be the case, I hope the Entomological Society, in conjunction with other societies interested in Natural History generally, will be in a position to save this famous locality from sharing the fate of its neighbour (Burwell). The area of the Fen is at present a very limited one, and should its most interesting fauna and flora become a thing of the past. I am sure it would be deplored by all those who can appreciate and see beauty in this home of *Papilio machaon*.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., October 4th, 1893.

COLLECTING AT DAWLISH.—As I recently spent a fortnight's holiday with my friend Mr. C. Nicholson at Dawlish, a few notes on the collecting at that place may be acceptable. We left London on the 18th of September, returning on the 5th of October. We found excellent accommodation at Mrs. Hannaford's, a large grocer's shop on "The Lawn," where we were boarded and lodged very cheaply indeed. We found *Colias edusa* common, particularly on the railway banks, and in one large waste field overgrown with thistles and hawkweed, at Luscombe. In this field there was also a perfect colony of *Vanessa atalanta*; I have never before seen this insect so plentiful in one spot; they settled on the thistle-heads, flew up, one might almost say, in shoals, at your approach; we saw three specimens which had the red band on the hind wing slightly bleached, but Mr. Nicholson only succeeded in capturing one of them. An occasional *V. urticae*, *V. io* and *V. cardui* also turned up, and a few specimens of *Panarge egeria* and *P. megæra*; the latter insect appeared to come out during our visit, for it was certainly much commoner when we left Dawlish than when we arrived there; no females were taken during the first few days of our stay, after which their number gradually increased. There were some lovely forms of *Plusia gamma* about, some of which we could not help taking for their very beauty. *Polyommatus phleas* was also common, the condition varying from "just out" to the "very ancient." Larva-beating proved a failure, hardly a larva of any consequence being taken. The woods at Dawlish, I may say, look better from a distance, to the entomologist's eye, than on a closer inspection; they seem to be principally used as game-preserves; oak is comparatively scarce, the commonest trees being ash and edible chestnut. Sugaring was also a failure; the first night we obtained one *Hadena protea* and an antiquated *Phlogophora meticulosa*; the second night we obtained one *Anchocelis pistacina*, and a specimen of *Triphæna pronuba*, apparently saved from the flood; the third night we obtained nothing whatever; then we gave it up in disgust. A much greater success was the ivy, which abounds at and around Dawlish; but, of course, we did not find the best of it until a night or two before we left; however, our last four nights were fairly successful. On Sept. 30th we took *Orthosia macilenta*, *Xanthia ferruginea*, *Anchocelis pistacina*, a splendid specimen of *Xylophasias polyodon*, *Cerastis vaccinii*, *Hadena protea*, *Agrotis segetum*, and *P. gamma*; we also took one specimen of *Cerastis spadicea (ligula)*, and a pair of *Epunda lichenea*: I suppose these *lichenea* were the best insects we got during our visit; unfortunately they are not in very brilliant condition. On Oct. 2nd we took, besides the common things mentioned above, three more male *E. lichenea*, one specimen of *Orthosia lota*, and one of *Agrotis saucia*. On Oct. 3rd we took another *A. saucia*, several *P. meticulosa*, some more *E.*

*lichenæ*, one *Cidaria psittacata*, one *Anchocelis rufina*, one *Agrotis puta*, and two worn *Triphæna comes*. On Oct. 4th we got another *C. psittacata*, more *E. lichenæ*, a few more *C. spadicea*, several *Anchocelis lunosa*, one *Scopelosoma satellitia*, and one *Agrotis suffusa*. The condition of the "ivy" things was, as a general rule, first-rate; the majority of them appeared to be only just coming out.—LAWRENCE J. TREMAYNE; 4, Lanark Villas, Maida Vale, W., November 4th, 1893.

COLLECTING AT MARKET DRAYTON.—It has been a wonderful season here for moths; especially I have noticed the large numbers of species usually common, which this year have been abundant, e.g., *Lobophora lobulata*, *Hadena adusta* *Rusina tenebrosa*, in the spring; and in the late summer, *Noctua c-nigrum*, *Xanthia silago*, *X. cerago*, and *X. ferruginea*, *Noctua glareosa*, *Agriopsis aprilina*, *Miselia oxyacanthæ* var. *capucina*. Sugaring was good in May, when *H. adusta*, *H. thalassina*, *Euplexia lucipara*, and *Rusina tenebrosa* swarmed at it; but almost useless in June, July, August, and the first part of September. I too found here, as Mr. Day did at Knutsford, that the moths swarmed on the flowers of a tallish grass, which grows in the mosses and damp places in woods. In one evening I found numbers of *Xanthia silago*, *X. cerago*, *Phlogophora meticulosa*, and *Noctua c-nigrum*, and a few *N. umbrosa*, *Hydræcia micacea*, *Tapinostola fulva* and *Celæna haworthii*. This was in the first week of September. In the middle of September I took two very fine specimens of *Vanessa c-album* in my garden, and on the 9th of October another specimen a little worn; I have never seen it here before. *V. atalanta* has been most abundant all through August and September; *V. urticæ* and *V. io* very scarce. *Pieris brassicæ* unusually common. It is by no means common here as a rule.—F. C. WOODFORDE; Market Drayton, Salop, October 25th, 1893.

COLLECTING AT TONBRIDGE WELLS AND ASHDOWN FOREST.—The past season, has, I consider, been a bad one for collecting. Larvæ in the spring were unusually abundant. At lamps and sallows I took *Cymatophora flavicornis*, *Anisopteryx ascularia*, *Hybernia aurantiaria*, *H. progemmaria*, *Selenia illunaria*, *Taniocampa gothica*, *T. stabilis*, *T. instabilis*, *T. rubricosa*. All insects here and on the Forest were quite three weeks earlier. Sugar has not been profitable. At light I took *Bombyx rubi*, *Habrostola urticæ*, *Hypsipetes ruberata*, *H. elutata*, *Heliophobus popularis*, *Iodis lactearia*, *Panagra petraræ*, *Melanippe montanata*, *Melanthia albicollata*, *M. ocellata*, *Cabera exanthemaria*, *Larentia didymata*, *Lomaspilis marginata*, *Eutheonia russula*, *Metrocampa margaritaria*, *Plusia moneta* (1), *Cidaria dotata*, *Geometra papilionaria*, *Odontopera bidentata*, *Pseudoterpna cytisaria*, *Halia wavaræ*, *Hemerophila abruptaria*, *Boarmia consortaria*, *Timandra amatoria*, *Oporabia dilutata*. At sugar I took, among others, *Hadena adusta*, *H. proteus*, *H. thalassina*, *H. oleracea*, *H. pisi*, *Thyatira batis*, *Acronycta psi*, *A. rumicis*, *Dipterygia pinastræ*, *Noctua c-nigrum*, *N. brunnea*, *N. baja*, *N. triangulum*, *N. festiva*, *Miana strigilis*, *M. literosa*, *Plusia gamma*, *P. iota*, *P. pulchrina*, *P. chrysitis*, *Caradrina cubicularis*, *C. morpheus*, *Gonophora detersa*, *Euplexia lucipara*, *Leucania pallens*, *L. impura*, *Lopharia* [*Xylophasia*] *lithoxylea*, *L. polyodon*, *Triphæna fimbria* (4), *Amphipyra pyramidea*, *Agrotis agathina*, *A. suffusa*, *A. segetum*, *Anchocelis litura*, *A. lunosa*, *A. rufina*, *Orthosia lota*, *Cerastis vaccinii*, *Xanthia silago*, *X. cerago*, *X. ferruginea*, *Scopelosoma satellitia*. The hornets coming to sugar on some nights were a great nuisance, especially as they carried away



insects.—R. A. DALLAS BEECHING ; 24, St. James's Road, Tunbridge Wells, November 13th, 1893.

NOTES FROM NORWICH.—A specimen of *Dianthæcia cucubali* was taken here on Oct. 11th. Newman gives June for its appearance. Among our captures of the past season we note the following:—Male and female *Platypteryx hamula*, one *Triphæna interjecta*, one *Melanthia albicillata*, two *Corycia taminata*, and several specimens of *Boarmia abietaria*. *Sesia apiformis* being common here, we shall be pleased to supply any readers of the 'Entomologist' with one or two cocoons of this formidable-looking moth.—B. C. TILLET; Sprowston Lodge, Norwich, November 27th, 1893.

CAPTURES IN OCTOBER AND NOVEMBER, 1893.—During October, and so late as Nov. 11th, specimens of *Xylophasia monoglypha* (*polyodon*) came to ivy-bloom and sugar; the examples were rather smaller in size than those usually seen in the summer. A few specimens of *Agrotis exclamationis* also appeared in October. *Xanthia circellaris* (*ferruginea*), *Cerastis spadicea*, and *S. satellitia* have been abundant on mild evenings throughout November. On Oct. 20th I noticed a solitary specimen of *Caradrina cubicularis* at ivy-bloom. On Oct. 19th I saw the only specimen this season of *Vanessa cardui*.—T. B. JEFFERYS; Langharne, Carmarthenshire, December 6th, 1893.

NOTES FROM GLOUCESTERSHIRE.—I saw *Vanessa atalanta* the first week in April, and have seen it without a break of more than a week's duration, until the last week. *Macroglossa stellatarum* has been more plentiful during the past summer than I have seen it for thirty years. *Chrysophanus* (*Polyommatus*) *phlæas*, abundant here as elsewhere; the last specimen, apparently freshly emerged, observed on November 1st.—N. F. SEARANCE; Micheldean, Gloucester, November 7th, 1893.

ALEURODES BRASSICÆ.—This little insect, referred to by Mr. C. W. Dale (Entom. xxvi. 357), has been over-abundant in many gardens in this locality, the brussels sprouts having been much affected with them.—T. B. JEFFERYS, Langharne.

RARE BRITISH DRAGONFLIES.—During the past season I have added to my collection a specimen each of two very rare species of dragonflies, namely, *Æschna rufescens*, from the Fens, and *Æ. mixta* from the metropolitan district.—W. HARCOURT BATH.

HORNETS IN WORCESTERSHIRE.—Hornets have appeared this season in a certain district in Worcestershire in unusual numbers, though for several years past they have been on the decrease.—W. HARCOURT BATH.

ABUNDANCE OF WASPS.—Wasps have swarmed in countless numbers during the past season, in every locality visited by myself in S. Britain. In some districts they did a great deal of damage to the fruit crops. The dry weather experienced in the spring is no doubt at the bottom of it all.—W. HARCOURT BATH.

DECTICUS VERRUCIVORUS.—A few months ago I appealed (Entom. xxvi. 164) for information concerning the capture of any specimen of this rare and handsome grasshopper in this country within the last few years. As I did not get any response to my enquiry, I presume very few specimens have been obtained. It may therefore be as well to place on record the capture



of two examples which I possess in my collection, namely, a green female, at Deal in 1889, and a brown variety of the same sex from the New Forest in Sept. 1891. The latter is the variety *binglei* of Curtis. I am only aware of one other record during the same period, namely, of the capture of a specimen in Kent.—W. HARCOURT BATH.

COLIAS EDUSA, C. HYALE, &C., IN BEDFORDSHIRE.—*C. edusa* appeared in fair numbers here this season; I took three or four specimens, males, in fair condition, and saw others. On July 25th, 1892, I captured a fine specimen of *C. hyale*, yellow variety, evidently just emerged. *Macroglossa stellatarum* has been plentiful this year, and the total absence of *Vanessa cardui* is most noticeable.—ALFRED H. BLAKE; High Street, Biggleswade, Beds, November 23rd, 1893.

REPORTED OCCURRENCE OF COLIAS HYALE IN DORSETSHIRE IN 1893.—After reading the note by Mr. F. W. Freir (Entom. xxvi. 322), in which he mentions that he saw, but failed to capture, a specimen of *Colias hyale* at Swanage in August last, I wrote to inform him that this species so rarely visits Dorsetshire that unless he had a sufficiently close view of it at rest to enable him to make sure about the identity of the insect, I had little doubt but that it was only *C. edusa* var. *helice*. In his answer Mr. Freir told me that, after thinking over the matter, he had come to the conclusion that my suggestion as to the butterfly being var. *helice* was in all probability correct, and left me at liberty to publish a note cancelling his former statement (*l.c.*). So very few examples of *C. hyale* have ever been taken in Dorset that, unless the pale "clouded yellows" that are seen here can be secured, or at any rate identified for certain, the only wise course is to take for granted that they are var. *helice*, for the *onus probandi* clearly rests on those who claim to have met with *C. hyale* in this county. So far as I am aware, not a single specimen of the latter was observed in Dorset in 1892, although it then occurred, but very rarely, near Bournemouth, in Hants; that was presumably the most westerly point that it reached on the south coast, for I have not noticed any record of its appearance in either Devon or Cornwall during that year.—EUSTACE E. BANKES; The Rectory, Corfe Castle, Dorset, December 19th, 1893.

[We shall feel greatly obliged to correspondents if they will abstain from recording species of whose identity they are not absolutely certain.—ED.].

APLECTA ADVENA IN IRELAND.—I caught three specimens of *Aplecta advena* here last season. I believe it is the first time this species has been captured, or at all events noted, in Ireland.—W. B. THORNHILL; Castle Coscy, Castle Bellingham, Ireland, December 18th, 1893.

EPIONE VESPERTARIA IN HEREFORD.—In the List of Lepidoptera taken last year at or near Hereford (Entom. xxvi. pp. 277, 278), for *Epione vespertina* read *E. advenaria*.

REPORTS OF SOCIETIES.—Although our present number extends to thirty-two pages, publication of the Proceedings of Entomological Societies is unavoidably postponed until February, when a double number will be issued.

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## ON AN UNUSUAL NUMBER OF MONSTROSITIES OCCURRING IN *EROS (PLATYCIS) MINUTUS*, F.

BY JOHN W. SHIPP.

MR. RYE (Ent. Mo. Mag. xii. p. 107, 1875) gave a few instances of examples of monstrosities occurring in a series of *Eros (Platycis) minutus*, which were taken in Leigh Woods, near Bristol. Having had the good fortune to find a colony of the species in Splatts Wood, Gloucestershire (Ent. Mo. Mag. xxviii. p. 288, 1892), I was this year (1893) delighted to find that the colony still existed. I, however, found that a large proportion of the species were deformed in many parts, notably in the antennæ and elytra. This colony exists in an old rotten ash-stump, which is infested with *Sinodendron cylindricum*, and upon the frass of which the insects probably exist. Mr. Rye also found his insects upon an old stump, which he supposed was oak, although it may in all probability have been ash. I found the imagines embedded in the powdery frass at the entrance to the burrows, or crawling about in a very sluggish manner around the foot of the stump; but a careful and prolonged search failed to discover any traces of either larvæ or pupæ. However, traces of the perfect insect were to be found in the frass and burrows in the stump, as an occasional elytron, or head and broken antenna, testified; but the strictest search failed to elicit more. Some of the fragments were found at some distance in the interior.

Mr. Rye took forty-seven specimens, of which only seven were females. This is remarkable, for out of a total of thirty-three specimens taken in 1892, the proportion of females were as three to two, whilst in August, 1893, out of a total of thirty-five specimens, twenty were females; thus showing that the females exceed the males. The insects themselves are of a very sluggish disposition, rarely moving more than a few inches during the heat of the day, and, although I watched them for hours, I did



not see any disposition to use their wings, although Mr. Rye states that one specimen flew briskly. They are to be found in the chinks of the rotten wood, or else resting on a piece of rotten wood or fragment of stick; the damper the situation the more they appear to enjoy it. On being touched or disturbed they feign death, but as soon as all is quiet again they make off to the friendly shelter of a lump of wood, or whatever happens to be in their way, where they remain quiescent until again disturbed.

I was surprised to notice, however, that only the perfect males and perfect females were *in cop.*, but on one occasion only did I see a perfect male and a slightly distorted female together.

Out of the thirty-five examples captured in 1893, eleven of them have either one or both of the antennæ deformed. Three of them have the joints 8 and 9 anastomosed, while in another specimen the joints 9 and 10 are coalescent, and in another it is joints 10 and 11. In five of the remaining cases the antennæ are imperfectly developed, probably owing to injury in the pupal stages; in one specimen the 4th and 5th joints on each side are doubled over, as if they had been forced into each other, the middle of each joint being notched. In all the cases the antennæ are twisted out of shape. The 5th joint, in the last case, of the left antenna is unduly dilated on the outer side.

In only one case is the thorax distorted, and then it is almost circular in shape, both the anterior and posterior angles having disappeared; the transverse carinæ have also disappeared, leaving the thorax quite smooth.

In seven cases the elytra are deformed; two specimens have the left elytron much shorter than the right, but this is a common occurrence in all beetles. In the remaining five cases the elytra were most probably retarded in development, being twisted into a variety of forms.

A great number of the specimens taken have the striæ of the elytra anastomosed. One specimen has the left intermediate tibia shortly twisted, while the corresponding tibia on the right is abnormally curved. Four specimens have the hind tarsi abnormal. No specimens with superfluous limbs or joints were seen.

In my notes of my captures in 1892, I find that out of thirty-three specimens, eight had abnormal antennæ, five had abnormal elytra, and seven had abnormal legs. Mr. Rye states that he found one specimen which had a male antenna on the right and a female antenna on the left. Another specimen, a male, had the right front tibiæ deeply bifurcate at the apex, the upper furcation bearing a normal tarsus, and the lower bearing a tarsus of which the three basal joints were normal, the fourth unduly dilated, with two perfectly formed claw-joints springing from near the centre of its apparently monstrous lobes.



It is remarkable that such an extraordinary amount of monstrosity and deformity should exist in this interesting species. Certainly it is a fragile insect, but others, as *Telephorus*, *Malachius*, *Lampyris*, although as lightly formed as *Platycis*, are not so prone to distortion.

Oxford University Museum, December, 1893.

## RHOPALOCERA FROM THE ALPES-MARITIMES IN 1893.

BY FRANK BROMILOW, F.E.S.

(Concluded from vol. xxvi. p. 349.)

*Vanessa c-album*, L. It has not been very common this year; I saw an example at Caussols, on September 29th, settled on a maple tree in front of our house. *V. egea*, Cr. Seen for the first time, this year, on May 29th, at Vence, settled on a wall; I took nine examples near the same place, later; also at Carabacel and the Vallon des Fleurs at Nice; in the Alpes-Maritimes it almost seems to replace *c-album*. It is stated by Milli re that there are three broods in the course of the year. *Egea's* habit of settling on walls and palings is noticeable, and it sometimes frequents gardens. *Ab. j-album*, Esp. Occurs with the type, but is rarer, being most generally met with in the autumn; first noticed on an excursion to the "gorges du Loup" (department of Var), on March 11th; a female was taken for the last time, near our house at Nice, on October 27th. *V. urtic e*, L. Common; the first example was, I believe, seen near Nice, on February 16th. *V. io*, L. Always abundant; rare in mountain districts; first observed on March 17th, at St. Maurice, north of the town of Nice. *V. antiopa*, L. Common on the coast; scarce at about 4000 feet altitude. *V. atalanta*, L. Very common; I have seen it at a height of 3960 feet above sea-level, but it does not ascend to any great elevation in the mountains. *V. cardui*, L. Abundant, but less so than the last; in former seasons I have observed it at an altitude of 8774 feet, on Mont Pepiori, in the northern extremity of the Alpes-Maritimes.

*Melit a cinxia*, L. Common; also in the mountainous parts. *M. aurinia* v. *iberica*, Oberth. Several specimens were seen for the first time this year at Vence, on May 29th. *M. didyma*, O. Abundant, and very variable in coloration; first taken in Nice, on June 27th. *M. athalia*, Rott. Generally distributed. This insect is also subject to variation; several years ago I took a form in which the two central rows of black spots on the fore wings coalesced, forming a band. Dr. Staudinger, to whom I sent it, stated it to be an "accidental aberration." *M. parthenie*, Hbst. One specimen only was, I believe, taken by our party at Caussols, on August 28th, but I have found it common in less bleak localities in other seasons.

*Argynnis euphrosyne*, L. Nice, in the Vallon des Fleurs; it was also captured at nearly 4000 feet elevation. *A. dia*, L. Common at Nice, in the Vallon des Fleurs, and many other places; this species I took at a height of nearly 4000 feet. *A. lathonia*, L. Abundant, perhaps the commonest of the genus; a specimen, which had probably hibernated, was seen for the first time this year at Cimiez (Nice),

on March 17th; I noticed *lathonia* on the wing in the mountains, on October 2nd. *A. aglaia*, L. Common, up to about 6000 feet. The alpine specimens from an elevation of 5-6000 feet are often small and dusky.

*Melitæa galatea* v. *procida*, Hbst. Common; I saw the species flying, up to nearly 4000 feet. *M. syllius*, Hbst. A male specimen was taken, for the first time this year, in the Vallon des Fleurs, by my cousin E. C. Casey, as early as April 26th; common by the sea, on the Route de Villefranche, St. Jean, and many other places, on rocky ground, which renders it difficult to capture; we took it in profusion and in good condition on the Chemin de Villefranche, on May 2nd.

*Erebia neoridas*, B. Extremely common in certain localities, as at Thorenc and near Caussols.

*Satyrus hermione*, L. Common nearly everywhere, generally settling on trees. *S. alcijone*, Schiff. Somewhat rarer than the last. *S. circe*, F. Not uncommon; also in the mountains. *S. briseis*, L. Abundant on bare, stony ground, and by roadsides; I saw a worn male at Nice, on October 13th; common also in the mountains; it is difficult to take on account of its alertness. Ab. female *pirata*, Esp. I only took one specimen myself at Caussols, on August 21st, and another was, I think, observed. *S. semele*, L. Common on stony ground everywhere, but not at any very considerable elevation. *S. arethusa*, Esp. This butterfly, which Millièrè catalogues as local, occurred in numbers at Caussols, during July and August, on the stony ground. Var. *dentata*, Stgr., almost replaces the type in the Alpes-Maritimes; it frequented the same spots as the typical *arethusa*. I took a male, on August 19th, with the apical spot on the left front wing smaller than that on the corresponding wing: One example had as many as four spots on the fore wings; another had the red spots on all the wings smaller than in the average specimens, and the fore wings had one spot absent, which is present in most examples. I have also met with male individuals having two black spots on the fore wings, which number Dr. H. C. Lang, in his 'Butterflies of Europe,' says are confined to the females, the males only having one. I have also in my collection, from the same place, a worn female with five spots on the left fore wing, the dot nearest the apex being smaller than the others. Curiously enough, the right front wing had this small spot almost obsolete. Specimens, too, intermediate between type and variety, were of constant occurrence. First met with on July 30th. *S. statilius*, Hufn. Abundant, flying also in the mountains. Var. *allionia*, F. Rarer than the last, but occurring in the same places as the type *statilius*; I have taken it in former years in Nice, in the Val Obscur, at the end of July. *S. actæa*, Esp. Common at St. Vallier, Grasse, Caussols, St. Martin-Vésubie, and other localities; I took a male with two apical spots instead of one, and a female with two supernumerary spots not present in typical females. Var. *podarce*, O. I only took one specimen on the stony hill-side at Caussols, with examples of the type, on August 5th. Var. female *peas*, Hüb. One specimen was captured by myself in the last-mentioned locality, on August 11th.

*Pararge mæra*, L. Generally distributed in the alps. *P. megæra*, L. Common on the coast and in the mountains; many authors aver that the insect is on the wing throughout the year in the south, but Millièrè says that the last brood appears in October. *P. egeria*, Esp. Abundant nearly everywhere.

*Epinephile lycaon*, Rott. Common in the mountains. *E. janira*, L. Abundant in fields. Var. *hispylla*, Hüb. Common; examples transitional



between type and variety are of frequent occurrence. *E. ida*, Esp. Fairly common on the coast; rare in the mountainous districts; the females appeared about a fortnight later than the males; the present year has been a great one for *ida*; first taken in Nice on June 29th; I captured a specimen in our garden, on July 21st, having the apical pupilled spot on one of the fore wings twice as small as that on the corresponding wing, similar to that already described in the case of *Satyrus arethusa* v. *dentata*. *E. tithonus*, L. Commoner than the last.

*Cænonympha dorus*, Esp. Common on the rocky ground at St. Vallier; rare at Caussols; the first specimen was taken in the Val Obscur, Nice, on July 4th; the spots are very variable, both in size and number. *C. pamphilus*, L. Abundant everywhere.

*Spilothyrus alcea*, Esp. Generally distributed; this insect was taken as late as October 21st, at Nice; ova and larvæ, some of the latter being full-fed, were found in large numbers on a mallow (probably *Malva ambigua*) in the mountains, at Caussols, on August 27th; during October I found larvæ, but sparingly, at Nice, in the rolled-up leaves of a mallow in our garden, and elsewhere. *S. althea*, Hüb. I have a specimen from the neighbourhood of Nice, taken some years ago, and submitted to Dr. Staudinger, who certified it to be a typical *althea*; scarcer than the last. The variety *baticus*, Ram., of South-western Europe, I have not met with up to the present. *S. lavatera*, Esp. Common on the coast and in the mountains, up to an elevation of about 3300 feet.

*Syrichthus carthami*, Hüb. Very common in the mountains up to 3960 feet altitude, at Caussols; I frequently met with it in little groups on damp ground near water; some of the females taken were deeply suffused with a powdering of greenish grey. *S. sao*, Hüb. Common everywhere; some examples are very small.

*Nisoniades tages*, L. I took a very unicolorous specimen, for the first time this year, at Nice, on July 4th.

*Hesperia thaumas*, Hufn. Abundant. *H. lineola*, O. Scarcer than the last. *H. actæon*, Esp. This year it was certainly the commonest "skipper" to be seen; first captured at Nice, on June 29th. *H. sylvanus*, Esp. Common in glades; captured, for the first time, in the Vallon des Fleurs, Nice, on July 1st. *H. comma*, L. Abundant.

(Erratum: Entom. xxvi., p. 358, line 18, for "3795 feet," &c., read "3960 feet," &c.)

Nice, France, November, 1893.

## ON THE VERTICAL DISTRIBUTION OF THE BRITISH LEPIDOPTERA.

By W. HARCOURT BATH.

(Concluded from p. 6.)

THE following table shows the relative heights of each vertical zone in each of the various latitudes in the British Isles, with the chief elevated tracts contained in them, after allowing a license of half a degree of latitude each way. I have also shown what would be the mean annual temperature of each locality



indicated, at the sea-level, deduced from the excellent charts published by the council of the Royal Meteorological Society (see 'The Meteorological Atlas of the British Isles,' 4to, 1883, price 5s., which I would recommend every intending student to obtain).

### PROPOSED VERTICAL ZONES IN THE BRITISH ISLES.

Latitude.	LOCALITIES AND MOUNTAIN GROUPS.	Mean ann. temp. at the sea-level.*	South Coast zone. Mean ann. temp.† 53-50° F.	Lower Hill zone. Mean ann. temp. 50-45° F.	Upper Hill zone. Mean ann. temp. 45-41° F.	Low. Alpine zone. Mean ann. temp. 41-36° F.	Up. Alpine zone. Mean ann. temp.† 36-32° F.
	<i>England &amp; Wales.</i>	F.	UP TO	UP TO	UP TO	UP TO	UP TO
50°	Scilly Isles .....	58°	900 ft.	.....	.....	.....	.....
	South Cornwall ...	52	600	2100ft.	.....	.....	.....
51	South Coast .....	51	300	1800	3000ft.	.....	.....
52	South Midlands ...	50	.....	1500	2700	4200ft.	.....
	Brecknock Mts. ...						
53	North Midlands ...						
	Snowdonian Mts....	49	.....	1200	2400	3900	.....
54	Cumberland Mts....						
	Isle of Man .....						
55	Cheviot Hills .....	48	.....	900	2100	3600	.....
	<i>Scotland.</i>						
55	Lowlands .....	48	.....	900	2100	3600	.....
56	South Grampians ..	47	.....	600	1800	3300	4500ft.
57	North Grampians ..						
58	Sutherland Mts. ...						
59	Orkney Isles .....	46	.....	300	1500	3000	4200
60	Shetland Isles .....						
	<i>Ireland.</i>						
52	Kerry Mountains...	51	300	1800	3000	4500	.....
53	Wicklow Mts. ....	50	.....	1500	2700	4200	.....
54	Mourne Mts.....	49	.....	1200	2400	3900	.....
55	Donegal Mts. ....						

\* The temperatures here given have been reckoned to the nearest degree.

† On the Continent this zone terminates equatorwards at the annual isotherm of 54·5, which is the northern limit of the olive or evergreen zone, constituting the typical arboreal conditions of the Mediterranean region.

† The summit of Ben Nevis represents a mean annual temperature of about 32·5, but it must be understood that the heights in feet given in the case of the higher zones, merely show the heights to which the belts in question would ascend if the elevations were of a sufficient altitude. In many cases, the highest mountains in each latitude only rise for a very little distance into the latter zones indicated.

The Grampian Mountains, in latitude  $57^{\circ}$  (which possess a mean annual temperature of  $47^{\circ}$  F. at the sea-level), may be taken as the standard for the British Isles, and in estimating their equivalent zones in other parts of the country an allowance of 300 feet for every degree of mean annual temperature has merely to be made, either added or deducted, as the case may be, whether it represents a higher or a lower figure respectively. This is founded on the well-known principle that for every 300 feet, or thereabouts, which one ascends up a mountain, the temperature falls about  $1^{\circ}$  F. The accompanying table will, I think, make this matter perfectly clear.

The best method undoubtedly for the entomologist to calculate the height of the various altitudes to which he ascends, is by means of an Aneroid barometer, which can be carried very easily, as it is only a small instrument. The cost of a good one, marked up to about eight or ten thousand feet, would be about £5. Other methods may be adopted, but this one is the best, I think, for our purpose. In recording observations upon the Lepidoptera occurring in each vertical belt or zone, the student should draw a distinction between those species which permanently reside within the limits of each and those which only visit them occasionally. A few examples will make this better understood.

*Vanessa cardui* has been seen upon the summit of Snowdon (3570 feet above the sea-level), while *Vanessa urticae* and *Argynnis aglaia* have both been observed on the top of Cader Idris (2930 feet in altitude); but it stands to sense that none of them were bred at anywhere near to elevations named, as their pabula do not grow at anything like the height upon any mountains in this country. On the other hand, the following species possess such a weak power of flight that it would be quite safe to say that they had undergone their metamorphoses in the neighbourhood at which they were found. I allude to *Erebia epiphron* var. *cassiope*, which occurs on the mountains of Cumberland at the height of 1500 feet; *Erebia aethiops*, which is found in the region of the Grampians, from the sea-level to the height of 800 feet; and *Cænonympha typhon*, which occurs in the same range, at no less an altitude than 2000 feet.

The student should also take special note of the number of broods found in each zone (those having two flights in the lower ones generally possessing only one at higher elevations); also of the varieties of each species in each zone of those which are common to two or more of them, many species in the higher zones developing either melanic or melanochroic tendencies when compared with their types in lower or more southern localities.

The study of the vertical distribution of the British Lepidoptera as here mapped out cannot, I think, fail to prove a new and very interesting source of pleasure to many an entomologist who wishes to direct his energies through some additional channel.

It will certainly have the result of stimulating mountaineering among those who, like myself, possess a special predilection for it, because, besides the object which most climbers have in view, namely, "a glorious glance around," it will in future, by those who take it up, be the means of providing something more substantial in the shape of specimens, as well as the accumulation of facts of great importance to science.

I hope, therefore, to see in the pages of the 'Entomologist,' next season, many notes, the result of practical observations, bearing upon this interesting subject.

195, Ladywood Road, Birmingham, Nov. 5, 1893.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 15.)

*ERIOGASTER LANESTRIS*, L.—Very locally abundant. Ardrahan (*R. C.*) and near Galway (*A.*); Magilligan, abundant (*C.*), Co. Derry; and near Kilkenny.

*BOMBYX NEUSTRIA*, L.—Not known in the northern half of Ireland, but has apparently a similar distribution to that of *Dasychira pudibunda*. Ennis, Co. Clare (*Br.*); near Cappagh, Co. Waterford (*Miss V.*); Killarney, two (*W.*); Castle Taylor, Co. Galway, abundant (*Miss N.*); one at Clondalkin, Co. Dublin, Mr. Grierson.

*BOMBYX RUBI*, L.—Universally distributed from Inishowen to Donegal (*W. E. H.*), to Westmeath and southwards to Killarney, &c., and from Howth to Dublin to the Co. Galway (*R. E. D.*) in the west.

*BOMBYX QUERCUS*, L., var. *callunæ*, Palmer.—Very common, and universally distributed. Mr. Birchall says that he has never met with the type in Ireland. I am of the same opinion. Two examples are, however, reported in the *E. Mo. Mag.* iv. 283, from Cromlyn (*Mrs. B.*), and Queenstown, Mr. Bond. The insect usually seems to hibernate as a larva. An example is recorded by Mr. Watts, however, taken at Killarney, June 22nd, 1890, nearly full-fed. It spun up at the end of July, and emerged the following June 21st. A female, with hind wings very dark brown like the male, is in the Rev. James Bristow's collection.

*ODONESTIS POTATORIA*, L.—Widely distributed, and occasionally common locally. At Ahascragh, very abundant (*R. E. D.*), and near the town of Galway (*A.*); near Enniskillen (*S.*); Markree Castle, Sligo; Favour Royal, Tyrone; Churchill, Co. Armagh (*J.*), &c.



## SATURNIIDÆ.

*SATURNIA PAVONIA*, *L.*—Distributed throughout Ireland, and often pretty common. I have taken it in Donegal, Antrim, Tyrone, Monaghan, Fermanagh, Westmeath, King's Co., Tipperary, Dublin, Wicklow, Waterford, Cork, Kerry, Galway, Roscommon, and Sligo. The Rev. James Bristow has a remarkable specimen, whose fore wings are of the female pattern, and the hind wings male.

## DREPANULIDÆ.

*DREPANA LACERTINARIA*, *L.*—Occurs in almost every locality that I have had the opportunity of examining; and is common occasionally. Buncrana, Co. Donegal, pretty numerous (*C.*); L. Gill and Markree Castle, Co. Sligo; Clonbrock, abundant (*R. E. D.*), and Ardrahan, one, Mr. Harker, Co. Galway; Hollybrook, L. Arrow (*Miss ff.*), Co. Roscommon; Mohill, Co. Leitrim; Enniscoe, Co. Mayo, abundant; Altadiawan and Favour Royal, Tyrone; Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*), Westmeath; Glendalough, Co. Wicklow; Kenmare and Killarney, Co. Kerry, &c.

*DREPANA FALCULA*.—Enniscoe, Co. Mayo; Favour Royal, Tyrone; Clonbrock, Co. Galway (*R. E. D.*). This seems a rare insect in Ireland, only four specimens having yet been recorded. Mr. Birchall gives Co. Kerry as a locality.

*CILIX GLAUCATA*, *Scop.*—Widely spread, but not generally at all numerous. Howth, one (*M. F.*), and at Drumcondra, Co. Dublin; Greystones, Co. Wicklow; Favour Royal, Tyrone; Ardlagh (*J.*); Clonbrock, not frequent (*R. E. D.*), and Galway (*A.*); Killynon (*Miss R.*), Westmeath; Banagher, King's Co.

## DICRANURIDÆ.

*DICRANURA FURCULA*, *L.*—Not by any means often met with in Ireland; but Stephens (under the synonym *bicuspis*) records that it is not very uncommon near Dublin, according to his correspondent Rev. J. Bulwer. Mr. Dillon having reported it very abundant at Clonbrock, Co. Galway, I beat for the larvæ, and found them very plentiful. Examples have been taken at Cromlyn (*Mrs. B.*), Westmeath, Farnham, Co. Cavan; near Stranorlar, Co. Donegal; Enniscoe, Co. Mayo; and Derry (*C.*).

*DICRANURA BIFIDA*, *Hb.*—Apparently rarer than the preceding. I have taken it at Markree Castle, Co. Sligo; one near Derry (*C.*).

*DICRANURA VINULA*, *L.*—Everywhere common. I have taken it in the extreme north of Co. Donegal; and Mr. Wm. Hart on Malin Head.

*STAUROPIUS FAGI*, *L.*—One example only as yet taken in

Ireland, near Kenmare, by Miss Vernon, who did not recognise her capture.

### NOTODONTIDÆ.

*PTILOPHORA PLUMIGERA*, *Esp.*—There is a specimen of this species in Mr. Dillon's cabinet, taken in September, 1892, attracted by a light in a window at Clonbrock, Co. Galway.

*PTEROSTOMA PALPINA*, *L.*—This insect seems, though widely distributed, never to be taken, except very sparingly. One in Wicklow near Tinahely (*Bw.*); Miss Nugent took several at Ardrahan, Co. Galway; I have met with it at Mucross, Killarney, Altadiawan, Tyrone; and one flew off sugar at L. Oughter, Co. Cavan.

*LOPHOPTERYX CAMELINA*, *L.*—The larvæ may be met with in most parts of Ireland, not rarely. I give a few localities: Howth and Cabinteely, Co. Dublin; Co. of Wicklow and Waterford; Kenmare, Co. Kerry; Favour Royal, Tyrone; Drumreaske, Monaghan; Armagh (*J.*); abundant at Powerscourt and Killarney (*B.*); shores of L. Conn, Co. Mayo, abundant; Mote Park and L. Arrow, Co. Roscommon; Ardrahan (*Miss N.*) and Clonbrock, very abundant (*R. E. D.*), Co. Galway; Markree Castle, Co. Sligo; Killynon, Westmeath; and Inishowen, Co. Donegal (*W. E. H.*).

*NOTODONTA BICOLOR*, *Hb.*—The capture of this rare moth at Killarney near Dinas, in 1859, by the late Peter Bouchard, then employed to collect for the British Museum, made a considerable sensation in the entomological world, as it had hitherto only occurred at Burnt Wood, Staffordshire. The first capture was followed by another specimen in 1860, found in a spider's-web. Another was got in Mucross demesne, six years later, by Mr. John Hardy, and larvæ were said also to have been beaten. But for many years this insect has been watched for in vain. In 1892, however, Miss Vernon, of Clontarf, showed me her collection of insects from Kerry, and besides the specimen of *Stauropus fagi* above referred to, I found two rather poor specimens of *Notodonta bicolor* from a new locality in Kerry. Miss Vernon is under the impression that it is not very rare there, for she says she recognised the wings more than once detached on the ground, the moth having been eaten by a bat. It is satisfactory to have evidence that this rarity is not extinct in Ireland, as Miss Vernon's capture is beyond question genuine.

*NOTODONTA DICTÆA*, *L.*—Widely spread, but not, I think, often numerous. Powerscourt, Co. Wicklow (*B.*); Howth (*G. V. H.*); near Belfast (*Bw. & W.*); Cromlyn, not rare (*Mrs. B.*); Westmeath; Derry (*C.*); Crossmolina (*S. R. F.*); Co. Mayo; Knocknarea Russ, Co. Sligo; Clonbrock, one (*R. E. D.*).



*NOTODONTA DICTÆOIDES*, *Esp.*—Apparently less rare than the preceding. I have beaten the larvæ at Farnham, Co. Cavan; Hollybrook, L. Arrow, Co. Roscommon; Cookesborough, Westmeath; near Favour Royal, Co. Tyrone; and Enniscoe, Co. Mayo, not infrequently. Mr. Birchall also found it not rare at the foot of Powerscourt waterfall, Co. Wicklow; Howth (*G. V. H.*) and Rathfarnham (*Bw.*), Co. Dublin; Buncrana (*C.*), Co. Donegal.

*NOTODONTA DROMEDARIUS*, *L.*—Very widely distributed, and common. The typical form has been said not to exist in Ireland, but to be replaced by the var. *perfusca*. But it would appear to me that the Irish insect is intermediate between the chestnut-coloured form of the South of England and the very dark purplish Scotch var. *perfusca* from Perth. I have seen some Irish examples of a warmer tint than most English specimens, and very similar to those taken in the Leigh woods at Clifton, and the New Forest. Howth (*G. V. H. & M. F.*); Powerscourt (*Bw.*), Co. Wicklow; Cromlyn (*Mrs. B.*), Westmeath; Markree Castle, Sligo; Cloghan near Stranorlar, Co. Donegal; Derry (*C.*); Favour Royal, Tyrone; Clonbrock (dark form), very abundant (*R. E. D.*), Co. Galway; shores of L. Conn and Glenmore (*S. R. F.*), Mayo, abundant.

*NOTODONTA ZICZAC*.—As the above in distribution and occurrence, and found in the same localities; also at Killynon, Westmeath (*Miss R.*); and Armagh (*J.*).

*NOTODONTA TREPIDA*, *Esp.*—"Not uncommon in the Co. Wicklow" (*B.*). I have no information.

*NOTODONTA CHAONIA*, *Hb.*—Mr. Birchall had a specimen taken at Killarney. I took two at Derrycunihy on the Upper Lake, 1885. It is reported to have occurred in Co. Wicklow (*B.*). At Clonbrock numerous specimens were taken in Mr. Dillon's moth-trap, two of which he sent me, which agree with the Killarney examples in very large size, a purer white ground colour than the generality of English *chaonia* that I have seen, with the pattern strongly marked.

*NOTODONTA TRIMACULA*, *Esp.*—Not uncommon at Killarney (*B.*). I have never seen an Irish example of this species.

### PYGÆRIDÆ.

*PHALERA BUCEPHALA*, *L.*—Abundant everywhere.

*PYGÆRA CURTULA*, *L.*—"Larvæ near Clonmel, Co. Tipperary" (*B.*); I also took the larvæ in July, 1883, at Mote Park, Co. Roscommon, and near Clonbrock, Co. Galway; and Mr. Watts reports the same as abundant the same date at Newcastle, Co. Down. The imago has, however, not yet been bred. As, however, the larvæ were almost full-fed when I took *P. pigra* in the



act of oviposition, I think I may venture to record the species as<sup>1</sup> Irish.

[*Pygæra anachoreta*, Fb.—Mr. Burchall turned out the larvæ of this moth at Howth, but apparently the attempt to plant the species has resulted in failure.]

*PYGÆRA PIGRA*, *Hufn.*—Very widely distributed, and abundant, but easily overlooked. Irish and Perth examples seem to be of a richer coloration than English. I have taken the larvæ and bred the imago from the following localities:—Buncrana and Cloghan near Stranorlar, Co. Donegal; shores of L. Conn, Co. Mayo; Favour Royal, Tyrone; Killynon, and Cromlyn (*Mrs. B.*), Westmeath; Mohill, Co. Leitrim; Kenmare (*Miss V.*), Co. Kerry; Newcastle (*W.*), Co. Down; near Galway, abundant (*A.*).

(To be continued.)

## REMARKS ON CERTAIN GENERA OF COCCIDÆ.

By W. M. MASKELL.

THE study of Coccids is extending, and new workers are entering the field every day, so that ere long this greatly neglected family of insects will receive all the attention which it certainly merits. There exists still, on account of the careless way in which entomologists until late in this century discussed specimens which came in their way, and also of the very fragmentary and unintelligent descriptions of species given, a good deal of confusion in Coccid classification. The time has nearly, if not already, arrived when a monograph of all known Coccids, embodying a proper synopsis and sequence of genera and species, can be advantageously undertaken: and, after twenty years' study of the family, I have ventured to take some preliminary steps towards such a monograph, in the hope that health and time may permit me to complete it.

Meanwhile, I find it necessary to draw attention to a few points in classification, and to endeavour to clear up some confusion which seems to have arisen on various points. There are persons who despise classification, calling systematizers mere mechanical catalogue-makers; and certainly there seems to be some little justification for this, in cases where authors have multiplied species recklessly, founding them on single or imperfect specimens or insufficient characters. Sometimes, of course, one specimen may be found as to which there can be no shadow of a doubt, and which may properly be separated from all others. But the man who *habitually* erects new species, and even new genera, to suit trivial features of a single specimen collected by him or sent to him, ought to be scouted and "sent

to Coventry" by all true lovers of science. Properly undertaken and thought out, a systematic catalogue is essential to real knowledge. Coccids suffer a good deal from the want of one.

A further reason for desiring such a thing is that the older (and I am sorry to say some of the modern) students of Coccids have been unable to travel out of the grooves of what I may call "ordinary" entomology; I mean the determination of species from external appearance and characters. Colour, size, general form, apparent structure of the secreted coverings, have been considered as of primary importance. On the other hand (rightly as it seems to me), I have always insisted that true Coccid classification should depend upon the anatomical characters of the insects themselves, and that mere external features, visible to the naked eye or an ordinary lens, are but secondary. A lepidopterist may get on capitally without using a microscope at all; a coccidist would fall into innumerable errors without one.

*Dactylopius nipæ*, Mask. and the tubercles of *Dactylopidæ*.

In Vol. xxv. of the 'Transactions of the New Zealand Institute, 1892,' I described under the above name an insect from Demerara, on *Nipa fruticans*. Mr. R. Newstead had received, unknown to me, specimens of the same species, and has published a description of it in the 'Entomologists' Monthly Magazine,' August, 1893, at which time he was not aware of my paper in the 'Transactions.' There are a few discrepancies between these two accounts of the insect, on which I have sent some remarks to Mr. Newstead; they are not important, with the exception of one which I proceed now to notice, as it affects the question of classification generally.

Following partly Dr. Signoret, I have ever since 1878 made the principal characters separating the *Dactylopidæ* from the *Acanthococcidæ* to consist of the antennæ, the anal ring, and the processes at the abdominal extremity to which I have given the name of "anal tubercles." In my 'Scale Insects of New Zealand, 1887,' I gave figures illustrating the anal rings, and in my paper of 1891 drew attention to the differences in the antennæ. There is thus no necessity to refer now to these points; but with regard to the tubercles the remarks of Mr. Newstead as to *D. nipæ* lead me to treat these organs in some detail.

After stating that in *D. nipæ* the tubercles are "very large," he says:—"In the form of the antennal joints it is clearly Dactylopid, but the very conspicuous anal lobes are abnormal." I am unable to accede to this proposition; neither can I agree to refer the species to *Rhizococcus* or to any genus of the *Acanthococcidæ*.

The subdivision *Dactylopidæ* consists of such genera as *Dactylopius*, *Ripersia*, *Orthezia*, &c. The *Acanthococcidæ* include *Eriococcus*, *Gossyparia*, &c. Now, in absolute strictness, I



suppose that we ought not to look upon the tubercles of, say, *Eriococcus* and *Dactylopius* as morphologically distinct at all. In both cases they seem to be only processes visible at each side of the abdominal extremity, and they always bear a more or less numerous arrangement of hairs and spines. Carrying this view a little further, we might say that they correspond sufficiently with the abdominal lobes of the Lecanids. But, when we come to attempt a clear and convenient classification, we find that the forms (*Acanthococcidæ*) possessing antennæ with short terminal joints and anal rings with eight hairs, exhibit almost always tubercles differing considerably from those of the forms (*Dactylopidæ*) with long terminal joints and anal rings with six hairs. Some of the *Acanthococcidæ*, e.g., *Rhizococcus casuarinæ*, Mask., or *Eriococcus turgipes*, Mask., have comparatively small tubercles; some *Dactylopidæ*, e.g., *Dactylopius nipæ*, Mask., or *Ripersia fagi*, Mask., have comparatively large ones. Yet there is a very long way between them, and there is no mistaking their character.

The form of the tubercles in a *Dactylopid* is usually rounder and less cylindrical than in an *Acanthococcid*; the spines and setæ, where they occur, are more scattered; and the margins are much less irregular. As a rule also they appear to be less chitinous. After treatment with potash, it will usually be found that the feet, antennæ and rostrum of a specimen remain of a much darker colour, with more solid appearance, than the rest of the body; so also do the abdominal lobes of a *Lecanid*, or the anal tubercles of an *Acanthococcid*. But the tubercles of a *Dactylopid* seem generally to be less hard. There are exceptions, as in *Ripersia fagi*, where the tubercles remain slightly darker, but these are few. Even in *Eriococcus turgipes* the tubercles, though small, are conspicuously dark and hard.

Some *Dactylopidæ* have the tubercles reduced nearly to a mere dot; in others they seem altogether obsolete: examples may be seen in *Dactylopius adonidum*, *D. calceolariaæ*, *Ripersia tomlinii*, *Pseudococcus asteliaæ*, &c. And I do not doubt that somebody will arise, some day, fastidious enough to separate under new subgenera the species with very minute from those with more noticeable tubercles. The time for this hair-splitting does not seem to me to have yet arrived.

The tubercles of *D. nipæ* are fairly large for the genus, and they approach those of some *Ripersiaæ*; and it was partly on this account (in addition to the cottony processes) that in 1892 I stated that it might almost be a *Ripersia* if other characters did not forbid it. I cannot detect any *Acanthococcid* feature in it. In the next volume of our 'Transactions' I propose to give some figures illustrating the differences in the anal tubercles which have just been mentioned.

Wellington, New Zealand, Oct. 12, 1893.

(To be continued.)



## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, Ph.D., F.L.S., &amp;c.

(Continued from vol. xxvi. p. 355).

*Blosyris turdipennis.**Blosyris turdipennis*, Guenée, Noct. iii. p. 138, n. 1519 (1852).*B. lusciniæpennis*, Guenée, l. c., p. 139, n. 1520 (1852).*Latebraria cinctilinea*, Walker, Lep. Het. xiv. p. 1283, n. 4 (1857).*Hypernaria patula*, Walker, l. c., Suppl. 3, p. 1085 (1865).

Bogota, Ega, Espiritu Sancto. In Coll. B. M.

*Blosyris helima.**Phalæna helima*, Cramer, Pap. Exot. iv. p. 43, pl. cccix. fig. D (1782).Var. *Erebus rengus*, Poey, Cent. Lep. Cuba, pl. 7 (1832).*Brujas posterior*, Walker, Lep. Het. xiv. p. 1252, n. 5 (1857).*Letis intracta*, Walker, l. c., p. 1266, n. 8 (1857).

Amazons. Var. St. Domingo and Jamaica. In Coll. B. M.

*PEOSINA, Guen.**Peosina mexicana.*♂ *Peosina mexicana*, Guenée, Noct. iii. p. 132, n. 1508, pl. 19, fig. 2 (1852).♀ *Peosina saundersii*, Guenée, l. c., p. 133, n. 1509 (1852).

St. Domingo. In Coll. B. M.

Under this species Walker placed *P. numeria*, and under the latter something entirely different, which fact explains his observation under *P. numeria*. The latter comes both from Jamaica and St. Domingo, as well as Honduras. It may, I think, be only a form of the above species; but without transitional forms I prefer to keep it distinct.

*Peosina leontia.**Phalæna leontia*, Stoll, Suppl. Cram. Pap. Exot. v. p. 155, pl. 34, fig. 6 (1791).*Melanchroia? leontia*, Walker, Lep. Het. ii. p. 389, n. 6 (1854).*Peosina trifinis*, Walker, l. c., xiv. p. 1246, n. 10 (1857).

Trinidad and Brazil. In Coll. B. M.

The species identified by Walker as *P. isone*, I believe to be *P. ochroleuca*. The true *P. isone* is in the museum collection from Sao Paulo.

*ACHÆA, Hübn.*Section *Ophisma*, Guen.\*

\* M. Guenée says of *Achæa* (which he places after his genus *Ophisma*); "Ce genre est bien naturel et facilement reconnaissable sans que j'insiste sur ses caractères." Unfortunately, this is exactly what every scientific worker must do. Genera, founded on pattern, make pretty groups; but structure distinguishes true genera.

*Ophisma mezentia.*

*Phalæna mezentia*, Cramer, Pap. Exot. iv. p. 70, pl. cccxxiii. fig. F (1782).

*Sypna lugens*, Walker, Lep. Het. Suppl. 3, p. 938 (1865).

Ceylon. In Coll. B. M.

I believe that *A. reversa*, Walk. (Lep. Het. xiv. p. 1399, n. 18), is nothing more than a variety of this species. The extreme variability of the species of *Achæa* is well known; and, therefore, the mere obliteration of the pale markings on the primaries is not likely to be of specific value.

*Ophisma ezea.*

♀ *Phalæna ezea*, Cramer, Pap. Exot. iii. p. 78, pl. ccxxxix. fig. D (1782).

♂ *Achæa ezea* var.?, Walker, Lep. Het. xiv. p. 1391, n. 1 (1857).

♀ *Ophisma dejeanii*, "Boisduval, Faune Ent. de Madag. p. 102, n. 3, pl. 15, fig. 4" (1833); see Walker, Lep. Het. xiv. p. 1395, n. 9 (1857).

West Africa. In Coll. B. M.

In spite of the similarity of the West African specimens to Boisduval's figure, I believe that Walker is wrong in his identification, and that the true "*O. dejeanii*" of Boisduval is a dull form of the species subsequently described and figured by Guenée as *Ophisma præstans*; the broad apical ochreous patch of the secondaries favours this view. It is significant, as evidencing the value of the generic characters by which M. Guenée declines to distinguish the genera *Ophisma* and *Achæa*, that, whilst he calls his own species an *Ophisma*, he places Boisduval's in *Achæa*.

*Naxia, Guen.**Naxia tropicalis.*

*Ophisma tropicalis*, Guen., Noct. iii. p. 238, n. 1651 (1852).

*O. detrahens*, Walker, Lep. Het. xiv. p. 1368, n. 2 (1857).

*O. luteiplaga*, Walker, l. c., p. 1369, n. 3 (1857).

*O. confundens*, Walker, l. c., p. 1372, n. 9 (1857).

*O. stigmatifera*, Walker, l. c., p. 1387, n. 39 (1857).

*O. fugiens*, Walker, l. c., n. 40 (1857).

Mexico, "West coast of America," St. Domingo, Bogota, Rio Janeiro. In Coll. B. M.

This is somewhat variable in colouring, but not in pattern.

*Naxia certior.*

*Ophisma certior*, Walker, Lep. Het. xiv. p. 1381, n. 28 (1857).

*O. contenta*, Walker, l. c., n. 29 (1857).

♀ ♀. Moulmein. Types in Coll. B. M.

*Naxia illibata.*

*Noctua illibata*, Fabricius, Ent. Syst. iii. 2, p. 16, n. 25 (1794).

*Hemeroblemma peropaca*, Hübner, Samml. Exot. Schmett. Zutr. figs. 541, 542.

*Ophisma lætabilis*, Guenée, Noct. iii. p. 241, n. 1657 (1852).

Hong Kong, Moulmein, Ceylon, Silhet. In Coll. B. M.

Fabricius' type is in the Banksian collection.

*Naxia lageos.*

*Naxia lageos*, Guenée, Noct. iii. p. 256, n. 1680 (1852).

*Ophiusa umbrosa*, Walker, Lep. Het. Suppl. 3, p. 968 (1865).

*O. obumbrata*, Walker, l. c., p. 969 (1865).

Java, Shanghai, South India, Nilgiris. Type in Coll. B. M.

## ACHÆA, Guen. (typical).

*Achæa lienardi.*

*Ophiusa lienardi*, Boisduval, Faune Ent. de Madag. p. 102, pl. 15, fig. 5.

*Achæa chamæleon*, Guenée, Noct. iii. p. 249, n. 1671 (1852).

Vars. *cerbera* and *zabulon*, Guenée, l. c., p. 250 (1852).

*Achæa spectatura*, Walker, Lep. Het. xiv. p. 1393, n. 6 (1857).

*A. ophismoides*, Walker, Proc. Nat. Hist. Soc. Glasgow, 1869, p. 367, n. 45.

*A. partita*, Walker, l. c., p. 358, n. 46.

Africa generally. In Coll. B. M.

A very variable species as regards the upper surface of the primaries.

*Achæa melicerte.*

*Phalæna melicerte*, Drury, Ill. Exot. Ins. i. p. 46, pl. 23, fig. 1.

*Achæa catilla*, Guenée, Noct. iii. p. 247, n. 1667.

Asia, Africa, Australasia. In Coll. B. M.

We have an immense series of this moth. It is quite useless to attempt to recognize more than one species under its numerous slight variations. It has been described by Fereday from New Zealand as a *Catocala*; but I have lost the reference to his description and woodcut.

*Achæa mercatoria.*

*Phalæna mercatoria*, Gmelin, ed. Syst. Nat. i. 5, p. 2544 (1788)

*Achæa accelerans*, Walker, Lep. Het. xiv. p. 1401, n. 23 (1857)

Java, Ceylon, India. In Coll. B. M.

(To be continued.)



DESCRIPTION OF AN ABERRANT *SMERINTHUS TILIÆ*.

By CHARLES ROTHSCHILD.



THIS specimen was bred in June, 1893, from a larva found at Tring, Herts, September, 1892. It chiefly differs from the typical form of the species by the entire obliteration of the central markings in the fore wings on the one side, while on the other they are only represented by a very small blackish green spot at the end of the cell. The basal part of the fore wings is pinkish grey, while the apical portion is of a dark green; the marking at the apex of the costa is of the normal shape and colour. The hind wings are almost entirely black, very faintly tinged with buff on the nervules. On the under side the usual streaks are somewhat indistinct. The example is a male, and expands 2·35 inches.

Tring Park, Tring, Herts.

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*HYPENA DAMNOSALIS*, WALK.

By A. G. BUTLER, Ph.D.

PROFESSOR SMITH may rest assured that my identification of Walker's type is correct; the species is too well marked for any one having type and description before him to make a mistake.

Since the Professor has gone so far as to thank me for calling attention to the above point, I am encouraged to mention another mistake, perhaps due to the fact that Walker's type is an unset and not very fine example, viz.: *Hypena idæusalis*, Walk., is certainly not Grote's *H. citata*, nor is it like it; in fact, it is not even a *Hypena*. *Bomolocha citata*, Grote, is = *exoletalis*, Guen.

However certain I may be of the correctness of my determinations, the many doubts which Professor Smith has recently expressed respecting them have made me careful to ask the opinion of other qualified entomologists before publishing them; so that in the mouth of two or three witnesses every word may be established.

## PROTECTIVE RESEMBLANCES IN S. AMERICAN INSECTS.

By W. C. MIT.

DURING a visit to Brazil in the latter months of 1888, I had about six weeks of pleasant enforced leisure at a friend's house on one of the thickly wooded hills overlooking the harbour and town of Santos. During this time, and also while at S. Paulo, Tijuca, and Petropolis, I employed myself in making a collection of butterflies, of which there is a great profusion and variety in Brazil. Not being an entomologist, my chief object was to bring home with me to Europe insects enough to make up some pretty cases, and to gratify a curiosity for natural history.

During the time I was collecting several observations struck me as possibly of interest in connection with the subject of protective resemblances, and I now mention some of them with a view towards contributing, however little, to the further elucidation of the subject.

While on a subsequent visit to England, some of the butterflies collected by me were reset and named through Messrs. Watkins & Doncaster, of the Strand.

The protective resemblances of butterflies in Brazil is, if I may so paradoxically express it, more apparent when permanently settled at rest than when flying through the air, or temporarily settled on a flower. In this respect they resemble European butterflies. There are many Brazilian butterflies which, when they display fully their charms of colour, pattern, flight, and metallic sheen, are very conspicuous objects in the bright sunshine, and yet, when at rest and alarmed, it is remarkable what retiring and inconspicuous objects they become. Some appear to be defended while on the wing by rapidity of flight, such as the *Papilio*, *Colanis julia* (Fabr.), *Anosia erippus* (Cram.); others by a zigzag and apparently erratic flight, such as the large blue *Morphos*, so common about Tijuca, near Rio, the whites and the yellows. *Eunogyra* and others, when they settle, have a habit of putting themselves on the under side of a leaf, flattening out their wings horizontally when at rest, being thus invisible, except from directly underneath.

Some butterflies have slight thin bodies and transparent wings, such as *Ithomia*. These frequent the undergrowth of woods, especially in the neighbourhood of open glades or places where the rays of the sun glance down through the upper growth of trees, and it is surprising to one when first observing this butterfly flying through the undergrowth of its native woods how more inconspicuous they are practically than one would have expected. The dancing flight through the bushes, and the transparent gauzy wings with black borders, harmonise with the dancing shadows of the leaves above.

The Heliconidæ, to which the Ithomiæ belong, are, if I remember rightly, confined to the South American continent, and many of them have a slow, steady, horizontal flight and conspicuous brilliantly-coloured wings. They appear thus to have no protection from the attacks of birds, and some naturalists (? Wallace) have founded on this circumstance the hypothesis that they possess the invisible protection of containing in their bodies some substance rendering them distasteful to birds. This supposition may be correct as regards the larger and more brilliantly-coloured species, but the smaller transparent species would appear to depend for protection on their inconspicuousness, if not entirely, at all events to some degree. It would therefore be interesting were investigations to be made with a view to finding out, by chemical analysis or otherwise, what the substance may be which renders some butterflies distasteful to birds, and whether it be equally present in inconspicuous as in conspicuous butterflies.

Brazilian butterflies, when at rest, possess many and varied contrivances of protective resemblances for safety. They generally settle on the lichen-covered tree-trunks, and are, when settled, so wonderfully like their favourite resting-places that they become almost invisible. Such a butterfly is *Ageronia feronia*, Linn. This is the species mentioned in Mr. Bigg-Withers' 'Pioneering in Brazil' as the "whip-butterfly," owing to the sharp whip-cracking sound made by its wings when battling with its fellows in the air. When at rest it usually remains with its wings spread horizontally, and the tips pressed against the grey lichens or bark of the tree-trunk. They generally settle at a height of two or three yards from the ground. This butterfly is then so like in colour and markings to the surface on which it rests that it is practically invisible at the distance of even a few yards. Its disposition is most pugnacious, and should a butterfly of the same or even of a different species approach it, it sallies out at a tangent with a strong swift flight, and buffets it boldly, making the crackling noise noticed by Mr. Bigg-Withers. It is remarkable that the under sides of the wings of this species are lighter coloured and more ornamental than the upper, which is the protected side. According to Mr. Bigg-Withers, a forest bird called the "suruqua" feeds chiefly on butterflies, and is partial to this species, being attracted by the whip-like crack, and darting after it on the wing. I was not so fortunate as to see this bird or any other pursuing butterflies, and in fact it is difficult to discover which are the butterflies' natural enemies.

Dr. Hans Gadow, of Cambridge, informs me that his captive chameleons display a great partiality for butterflies as food, and I once discovered a centipede with a moth in its mouth. I have seen house sparrows occasionally chase cabbage butterflies, and



beyond this I have not had opportunities of finding out what their persecutors may be. Judging from their protective coloration (when at rest) they would appear to be numerous and ever present.

*Gynæcia dirce*, Linn., is another butterfly frequenting rather similar localities to *Ageronia feronia*, but when at rest it closes its wings vertically, and then the elaborate network pattern of dark yellowish brown on a creamy yellow ground matches the lichens covering the tree-trunk on which it rests. The upper side had a conspicuous broad yellowish white bar diagonally across the upper wing on a dark ground.

These two butterflies are good illustrations of the general proposition that the protective colouring and markings are applied to that portion of the insect which is exposed when at rest, the presumable position of danger. We see this illustrated also in the large European red under-wing moth, which, flying by day, displays in flight the bright crimson lower wing, and is almost invisible directly it alights on the lichen-covered boulders, where the grey-patterned upper wings fold flat over and hide the gaudy lower ones. It is very suggestive also to watch how instinctively and probably unconsciously the European grayling butterfly shrinks down the eye-spot, the only conspicuous part of its under side, and shuts it out of sight beneath the under wing directly it is alarmed by any sudden motion on the part of the spectator.

The butterflies which frequent woods in Brazil are an interesting study from many points. They are dark in colour—blacks, browns, dark blues, and dull yellows. One would judge from this that their enemies are more numerous in woods than in the open fields.

*Pierella lena*, Linn.: a dark yellowish brown is the colour of the dead leaves of the forest trees, over which it flits in a weird gnome-like manner a foot from the ground, choosing in preference to follow the course of a stray leaf-covered forest pathway. The under side of the wings still more closely resembles the dead leaves, even to the veinings and a peculiar dried-surface semitransparent lustre. It is easily overlooked when resting, as it usually does, on the dead fallen leaves, the wings closed, and showing only the under side with its imitative veinings. There is a closely allied species with similar habits, which has orange-brown patches on the lower wings, and it is a curious circumstance that while these render this butterfly conspicuous while flying, the upper wings are semitransparent, dark brown in colour, and to all appearance calculated to resemble the dead leaves over which it flies, and thus tends towards concealment. The under side of the wings is quite sombre and protective in coloration.

*Myscelia orsis*, Drury, is of a beautiful dark velvety blue on

the upper side, and dull purple-brown on the lower. It frequents the small open glades of woods, and rests with its wings folded, thus concealing the showy upper side.

*Taygetis euptychidia* is a brownish black butterfly on both upper and under side, the latter having a few inconspicuous ornamental spots along the edge.

*Eunogyra satyrus*, Westw., is almost jet-black and plain on the upper side, black and somewhat unassumingly ornamented on the under side.

Most of the small butterflies frequenting thick woods are dark brown and inconspicuously marked. My experience was that the thicker the wood the fewer and smaller the butterflies it contained. The borders and large openings in woods are very favourite places for them, and the brighter coloured ones love to bask in the bright sun and flowers. On certain low scrub in full bloom I used to see clouds of butterflies of various kinds hovering and settling, chiefly whites and yellows.

Among the protective devices made use of there are some remarkable ones. I observed, at Santos, a white moth with peculiarly rounded wings, and when at rest with its wings fitted closely against the surface it presented a striking resemblance to a round splash of bird excrement. There was also a greyish-white *Curculio* beetle, which, when alarmed, curled itself up and lay quite still, with its legs folded. The round body then resembled the excrement of a gallinaceous bird. The wonderful resemblance which the "stick insects" bear to dry twigs is very familiar to all. They are numerous at Santos, and of various species.

The metallic lustre butterflies of Brazil are sun-baskers. Many South American butterflies suck the juices of ripe and decaying fruits. Such are the large blue *Morphos*. The immense owl butterfly, so called from its extraordinary resemblance to an owl, of the markings of the under side of its wings, with its large staring peacock eye-spots painted on its lower side, and the beak represented by the lower part of the body, is a crepuscular flyer, coming out from its concealment under the bushes about six o'clock in the evening, and flying up and down over the woodland streams. It is frequent near what used to be White's Hotel at Tijuca, a lovely suburb of Rio Janeiro. The wood moths are mostly sombre in coloration, and suit the darkness of the thick woods and scrub. There are some very large moths of a brownish black colour, with a subdued pattern in various shades. These harmonise well with the dry bracken and other ferns, among which they conceal themselves during the day.

A circumstance for which I was not prepared, and much surprised me, was the large proportion of species of black butterflies in Brazil. These have generally red and white orna-



mentation. The large gaudy yellow butterflies which frequent the yellow flowers of what looked like wild bananas have a very rapid, erratic flight. They are difficult of capture with a net, and one can well imagine that a bird also would have difficulty in catching them.

Where the profusion of butterfly life is so great as in Brazil, in the variety of species as well as in the number of individuals, there are more opportunities for observations and generalisations than in even the South of Europe. A visitor from the Old World finds his old familiar friends represented by new American cousins bearing a strong family likeness to those he has left behind him. The cabbage butterflies, brimstones, painted lady, tortoiseshell, swallow-tail, and many others, are represented in this manner.

What struck me most forcibly were the traces I noticed of two opposite and apparently conflicting influences on the ornamentation of the Brazilian butterflies. One of these influences, which no doubt is that which Darwin called Sexual Selection, leads to brilliant metallic colours, strong contrasts, and general display. The other, which is probably the necessity for concealment, tends to sombre colours and resemblance to the objects on which the insect settles. In most cases this latter influence can be traced modifying and checking the first. Sometimes one, sometimes the other, obtains the ascendancy. In some cases, as in certain wood butterflies, the necessity for concealment seems to have almost suppressed the ornamentation. Yet even in the protective markings may often be traced what looks like a subdued or struggling effort towards ornamentation. Of this nature may be many of the smaller eye-spots, markings, and dusky symmetrical curves and lines. Many butterflies which have a habit of opening their wings, turning round at the same time to display their finery, shrink up when danger threatens, and are then wonderfully inconspicuous. In a large number of Brazilian butterflies there is a pronounced tendency to a stripe passing over the upper wing on to the lower one, and symmetrical with it when spread open. This stripe is generally lighter coloured than the ground.

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## THE ILLUMINATED MOTH-TRAP.

By E. F. STUDD.

HAVING now had my moth-trap in use for rather over a year, I think it may interest your readers if I give a list of my captures in it during that period, and add a few remarks on its working.

First, I would never recommend anyone to be discouraged if he fails to succeed with it at first, as, unfortunately, some of



my correspondents have done. If the trap is made according to my direction, and the place is suitable, success sooner or later is a certainty. The principal thing is to select a suitable place. I have had all my best catches by setting the trap on the edge of a wood bordering a large heath, and now always keep a trap set there. It is not set so that the light goes over the heath, but facing along a glade near the edge of the wood, and running parallel to the heath from west to east. I cannot say why, but I have had all my best catches with the trap facing east. I have another trap, which I keep moving about, setting it in other spots which appear likely; and yet sometimes, on nights when the first trap has had a large catch, the second trap, often set within a quarter of mile, has had nothing, though set in a place to all appearance equally or even more likely. Hence it seems tolerably clear that a great deal depends on hitting on the right place. My experience is that, until you have given it a fair trial, you cannot tell whether a place is good or no. I always place the trap on a table, about two and a half feet high. I have tried various elevations, and I find this as good as or better than any. I would not recommend anyone to paint his traps white, as one of my correspondents has done, as that is calculated to affect the light proceeding from it; nor indeed to paint them at all, which, with the zinc covering, is quite unnecessary. I find it very little use to set the trap on moonlight or frosty nights; but wet, gusty ones I have found very good.

With these preliminary remarks, I will proceed to my list:—

*Vanessa atalanta* (1 specimen on September 19th; it clearly was attracted by light, as the trap was empty when the lamp was lit just after dusk, and the insect was there when the trap was visited before sunrise the next morning), *Macroglossa stellatarum* (1), *Nola confusalis*, *Calligenia miniata*, *Lithosia mesomella*, *L. lurideola* (in swarms, male and female), *Euchelia jacobæ*, *Arctia villica* (3 males), *Spilosoma mendica* (several males), *S. lubricipeda* (very numerous), *S. menthastri* (do.), *Porthesia similis*, *Psilura monacha* (males very numerous, 3 females), *Dasychira pudibunda* (males very numerous, and a few females), *Pæcilocampa populi* (males in swarms, and 4 females), *Odonestis potatoaria* (1 male), *Cilix glauca*, *Stauropus fagi* (1 male), *Lophopteryx camelina* (several males), *Notodonta dictæoides* (1), *N. trepida* (5), *N. trimacula* (2), *Phalera bucephala* (males), *Asphalia ridens* (4), *Demas coryli* (1), *Diloba cæruleocephala* (males), *Leucania conigera*, *L. lithargyria*, *L. pallens*, *Tapinostola fulva* (2), *Hydræcia nictitans*, *Xylophasia monoglyphæ*, *Neuronia popularis* (numerous males), *Charæas graminis* (1), *Luperina testacea*, *L. cespitis* (1), *Mamestra brassicæ*, *Grammesia trigrammica*, *Stilbia anomala* (3), *Rusina tenebrosa* (males in plenty), *Agrotis segetum*, *A. exclamationis*, *A. corticea*, *A. tritici* (3), *A. strigula* (numerous), *Noctua depuncta* (2), *N. plecta*, *N. c-nigrum* (1), *N. brunnea* (2), *N. festiva* (very numerous and varied), *N. umbrosa*, *N. xanthographa*, *Triphæna pronuba*, *Amphipyra pyramidea*, *Pachnobia rubricosa* (1), *Taniocampa gothica* (numerous males), *T. incerta* very numerous and varied), *T. stabilis*, *T. munda*, *T. pulverulenta* (in

swarms), *Orthosia macilentata*, *Anchocelis pistacina*, *A. lunosa*, *Cerastis vaccinii* (in swarms), *Scopelosoma satellitia* (white, deep orange, and yellow spots), *Dasyampa rubiginea* (2), *Xanthia citrargo*, *X. flavago*, *X. aurago* (1), *X. circumcellaris* (3), *Calymnia trapezina* (very numerous and varied) *C. affinis* (1), *Dianthæcia capsicola* (1), *Miselia oxyacanthæ*, *Euplexia lucipara*, *Phlogophora meticulosa*, *Aplecta nebulosa* (3), *Hadena protea* (numerous), *H. dentina* (1), *H. thalassina* (2), *Xylocampa areola*, *Calocampa exoleta* (1), *Asteroscopus sphinx* (males very numerous), *Habrostola tripartita* (2), *Plusia chrysitis* (1), *P. gamma*, *Aventia flexula* (3), *Zanclognatha grisealis*, *Z. tarsipennalis*, *Hypena proboscidalis*, *Uropteryx sambucaria*, *Epione apiciaria* (1 male), *Rumia luteolata*, *Venilia macularia*, *Metrocampa margaritaria* (numerous males), *Ellopia prosapiaria*, *Pericallia syringaria*, *Selenia bilunaria*, *S. lunaria* (2), *S. tetralunaria* (2), *Odontopera bidentata*, *Crocallis elinguaris*, *Eugonia alniaria* (canaria) (1), *E. erosaria*, *E. quercinaria*, *Himera pennaria* (males in numbers), *Phigalia pedaria*, *Biston hirtaria* (3 males), *Amphidasys strataria* (6 males and 1 female), *A. betularia*, *Hemerophila abruptaria*, *Cleora glabraria* (several males and females), *C. lichenaria* (do.), *Boarmia repandata* (several, 2 of var. *conversaria*), *B. gemmaria*, *Tephrosia crepuscularia* (very numerous), *T. biundularia* (do.), *Pseudoterpna pruinata*, *Geometra papilionaria* (1 male), *Iodis lactearia*, *Hemitea strigata*, *Acidalia bisetata*, *A. subsericeata*, *A. remutaria*, *A. imitatoria* (1), *A. aversata*, *Timandra amataria*, *Cabera pusaria*, *Bapta temerata*, *B. bimaculata* (2), *Macaria liturata*, *Panagra petraria*, *Numeria pulveraria* (several males), *Abraxas grossulariata*, *Hybernica rupicapraris*, *H. leucophæaria* (several, varied), *H. aurantaria* (very numerous), *H. defoliaria* (in swarms, some very fine and striking vars.), *H. marginaria* (in swarms, several nice banded vars.), *Anisopteryx æscularia*, *Cheimatobia brumata*, *Oporabia dilutata*, *Larentia didymata*, *L. multistrigata*, *L. viridaria*, *Emmelesia affinitata*, *E. decolorata*, *Eupithecia nanata*, *E. vulgata*, *E. expallidata* (1), *E. minutata* ? (2), *E. lariciata*, *E. abbreviata*, *E. exigua*, *E. pumilata*, *Lobophora carpinata* (1), *Thera variata*, *Hypsipetes sordidata*, *Melanthia ocellata*, *M. sociata*, *M. montanata*, *M. fluctuata*, *Anticlea badiata* (numerous), *A. nigrofasciaria* (1), *Coremia designata*, *C. ferrugata*, *C. unidentaria*, *Campptogramma bilineata*, *Cidaria siderata*, *C. miata* (1), *C. picata* (several), *C. truncata*, *C. immanata*, *C. suffumata*, *C. silaceata* (several), *C. fulvata* (1), *C. dotata*, *Eubolia plumbaria*, *Anaitis plagiata*, *Chesias spartiata*, *Pyrausta purpuralis*, *Herbula cespitalis*, *Eurrhyncha urticata*, *Scopula ferrugalis*, *Botys asinalis* (1), *Pionea forficulis*, *Mimæseptilus pterodactylus*, *Alucita hexadactyla*, *Crambus tristellus*, *C. geniculus*, *C. culmellus*, *Aphomia sociella*, *Tortrix podana*, *T. viridana*, *T. ministrana*, *Leptogramma literana* (1), *Dictyopteryx læstingiana*, *Retinia pinicolana*, *Xanthosetia hamana* (1), *Tortricodes hyemana*, *Diuræa fagella* (grey), *Epigraphia steinkelneriana* (1), *Tinea semifulvella* (1), *Nemophora swammerdamella* (males), *Adela viridella* (males), *Phibalocera quercana* (males), and numerous other Micros I have not been able to identify.

Where in the above list I have not given the number taken, it is because the insect is a common one and has been taken commonly in the trap, and calls for no special remark.

Oxton, Exeter, January 1st, 1894.



## THE CYANIDE BOTTLE.

BY J. ARKLE.

IN the 'Entomologist' for April, 1893 (xxvi. 136), Mr. P. E. Radley, writing from Ceylon, contributes an interesting note on cyanide reaction. The queries put by the writer are, I believe, matters of such general interest that I venture to propose certain solutions, which, although drawn to a large extent from experience, are yet in some measure inseparable from conjecture.

First, as to the sloppy condition of the cyanide bottle. Mr. Radley presumes this is attributable to the damp climate of Ceylon. To some extent I believe this likely, but, not knowing his method of charging the bottle, and having no personal acquaintance with the climate of the island, it would be premature to give an unqualified affirmative. I would recommend every entomologist to charge his own bottle, and, in doing so, to remember that he is dealing with one of the most powerful absorbents—plaster of paris. Since its use, in this case, is to fix the potassium in the bottle (through its adhesiveness with glass when mixed with water), and allow the cyanogen to pass through its porous substance, it is important that as little water as possible be added in converting it from a powder into a paste. For a bottle to be carried in the waistcoat pocket (a pomade bottle), break up an ounce of cyanide of potassium; put it into a bottle. Place on a slate a small heap of plaster of paris; make a depression in the centre of the heap, and pour into the depression a little water, using the end of a disused table-knife the while to convert the powder into the stiffest paste. Take a little of this paste, and press it with the knife-handle on the potassium, and against the sides of the bottle. Add and press a layer of cotton-wool to receive the insects, and leave the plaster for a few minutes to dry. Then cork with a tight, well-sealed cork, and the bottle is ready for use, its contents being white and dry, or as white and dry as possible. In our climate it will be a long time before such a bottle becomes "sloppy," that is, before the plaster ceases to adhere and becomes mixed with water and loose potassium. As time goes on the collector will note that a dampness, not interfering with efficiency, *does* somehow affect the contents. Probably this is due to the admission of air (never dry) when using the bottle, and in a climate like that of Ceylon it may be reasonable to expect this effect intensified. If, however, in mixing the plaster of paris too much water be used, the collector may even *start* with a sloppy bottle.

As to its interference with insect colours, cyanide of potassium is one of the most powerful "bleachers" known, and it is difficult to see how a damp climate can act as a deterrent. On the contrary, dampness may be reckoned as an auxiliary in its attack upon colour. As an entomologist I have never known



cyanide of potassium, used as described, affect any colour except green; but, with a treatment of wet cyanide, I have seen some startling "varieties" of Lepidoptera produced. Greens are among the most interesting of insect colours. Some, as in *Iodis lactearia*, appear to depend upon the supply of oxygen in life, and are therefore probably held in the circulatory fluid, as red is in that of the human subject. It has been suggested that this form of insect green is heightened by the wing-scales producing polarised light. Some greens are iridescent, as in the case of dragonflies, and are proof against dry cyanide. Others are not greens at all, as on the under wing-surfaces of *Pieris rapæ* and *P. napi*, but optical delusions resulting from a mixture of black and yellow scales. The green of such an insect as *Geometra papilionaria* may be taken as the type of a fourth class where a strong pigment seems present. Most of the lepidopterous greens, and certainly all the examples quoted, are peculiarly susceptible to the action of cyanide of potassium, and quickly change to a suggestive ochreous. Therefore, when it is recollected what a strong "affinity" cyanogen exhibits for certain metals, and that iron exists in animal circulatory fluids, it is not too much to suppose that these greens contain iron.\*

After trying various methods, including the use of ammonia, for killing *G. papilionaria* so as to preserve the colour, I adopted the least of the evils, and carefully exposed the moth to *no more* than a fatal dose of the cyanide bottle, that is to say, whilst doing nothing more than terminating the respiratory functions, I removed the insect at once, so as to prevent cyanide saturation of the wing-tissue. The body of the moth, however, through spiracular inhalation of cyanogen, always turned ochreous, whilst the wings retained their natural green; but by-and-bye the rays assumed the ochreous tint. I am not acquainted with the *Catopsilia* referred to by Mr. Radley, but I strongly suspect that the reason why the "nervures" even "go green" is connected with the above illustration. This green may arise from contact of the cyanogen with some other ingredient than iron, the cyanogen reaching only the nervures, or rays, containing the main channels of transmission.

I have now reached Mr. Radley's last interesting query: "Is there any way," asks Mr. Radley, "to prevent them [green Noctuæ and Geometræ] changing colour?" I can thoroughly recommend for this purpose the "Killing Fluid" of Messrs. J. & L. Davis. I have used it constantly in the field during the past season, and therefore claim to be acquainted with its many merits. *It disturbs no greens*; it is quick in dealing with insects which appear to defy even the cyanide bottle, and it leaves the insect perfectly relaxed and fit for setting.

Chester, Dec. 12th, 1893.

\* Dry specimens might be burnt as a test for metal vapours.—J. A.

REMARKS ON *CHRYSOPHANUS DISPAR*.

BY C. W. DALE, F.E.S.

FIRST of all, there is a considerable difference in size, the smallest in my collection measuring one inch and five lines across the wings, and the largest two inches and two lines. It also varies in outline. My father took two male specimens at Trundle Mere, in Hunts, the fore wings of one being long and acute, and of the other short and obtuse; but they do not differ in any other respect. The male is of an effulgent coppery colour, with a larger and a smaller black spot on the fore wings. In the var. *rutilus* the second spot is absent. This variety has been occasionally taken in England, in company with the type. Haworth recorded it under the name of *hippothoë*. There is considerably more variation in the female. This sex has two larger black spots above the centre of each fore wing, and a row of seven between the centre and the hind margin, which is broader than that of the male. The outer rows of spots are elongated, like those of *Lycæna arion*, but vary somewhat in size, and I have a specimen in which the two middle spots of the row are larger than the rest. The hind wings of this sex are of a brown-black above, much irrorated with copper, the veins being copper-coloured, and running into a broad copper band near the hinder extremity, the edge itself being brown, with six triangular black-brown spots extending into the copper band, and giving it a lobed appearance.

The hind wings of some specimens are almost black, and, being hardly irrorated with copper at all, the broad copper band stands forth very distinct. I have one grand variety, almost black, with the markings much suffused.

Mr. Sidebotham had a variety of the opposite extreme, being of a silvery white, like the var. *schmidtii* of *C. phlæas*.

*C. dispar* was known to be a British species previous to 1790, and at one time was so numerous that Mr. Haworth took no less than fifty in a single day in Bardolph Fen. The latest capture appears to have been in 1847. I well remember one story my father used to tell. In 1819 he had in his employ an old boatman at Whittlesea Mere, Thomas Speechley by name. One day the other boatmen got round him, and asked him what he was about. "Catching butterflies worth a guinea apiece," was his reply. "They should like that work too," they said. Before my father's death, in 1872, specimens of *C. dispar* were actually selling for a guinea apiece; but how astonished he would have been at the idea of their selling at £6.

There is no doubt that an allied species, *C. virgaureæ* (the scarce copper), used to occur with *C. dispar* in the fen country. In addition to the published records in the 'British Naturalist,'



vol. ii. p. 242, Mr. Briggs informs me he has a specimen taken by an uncle in Huntingdonshire many years ago. Mr. Stainton, and other authors who followed him, excluded it from the British list, but included *C. chryseis* (the purple-edged copper), a much more doubtful species: try two of the records—"Taken at Epping by a man,\* name unknown; taken in Ashdown Forest, Sussex, by Mr. Plasted." Who was Mr. Plasted? The reputed captor of *hero*, *arcanius*, *catena*, *caloris*, and *equestrata*.

Glanville's Wootton, Sherborne.

## NOTES AND OBSERVATIONS.

FIRST AND LAST APPEARANCES OF LEPIDOPTERA.—In the January number of the 'Entomologist' for 1893, I suggested that lists of first and last appearances of Lepidoptera observed throughout the year would be of interest. Between forty and fifty correspondents, residing in various parts of the country, intimated their intention of keeping records on the lines suggested; but I regret to add, so far, only some two or three of these have furnished me with any evidence of their having carried out their good intentions. Probably, however, the abnormally early emergence of many species during the first part of the season, and the scarcity of others later on, may have prevented many from recording their observations systematically. I am inclined, therefore, to believe that the small number of lists received is due to this, rather than to lack of interest in the matter.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

CERASTIS VACCINII VAR.—I see in the report of the Entomological Society of London (p. 72) that I am credited with the capture of this *Noctua* (var. of *rubiginea* or *vaccinii*). I did not take it here, but, as I thought I had shown, had merely received it from Berkshire as *Dasy-campa rubiginea*. Will you kindly note this in your next number.—H. W. LIVETT; Wells, Somerset, January 7th, 1894.

SECOND BROOD OF APATURA IRIS.—This has been a year of surprises and remarkable appearances in the entomological world, and amongst the most extraordinary of these events may be placed the occurrence of a second brood of *Apatura iris*. In view of the fact that the young larva of this insect usually hibernates whilst in the third stage, and that the imago emerges the following June, a few notes on my experience this season may prove interesting. Whilst searching for larvæ in the New Forest, during the week ending August 9th, I found four specimens of *A. iris*. They were all in the second stage, and of course quite a month in advance of the usual time. On returning home I sleeved them on a fine healthy willow, but on examination a fortnight later there were only three larvæ to be seen, one having probably been destroyed by earwigs—which swarmed in the garden—

\* Was this the same person (supposed to be a dealer) from whom J. F. Stephens, in 1817, received specimens of *Calophasia linariæ*, from Woodside, near Epping?



or some other enemy. From time to time I found the three larvæ which remained feeding and growing satisfactorily down to the end of September, when cold nights set in. At that time one of the larvæ was full-fed, another was in the fourth skin, whereas the third specimen had not advanced beyond the third stage. On October 7th, I opened the sleeve once more, and discovered that the smallest larva had disappeared, the largest was still healthy, and the remaining one was afflicted with scouring; it eventually died before reaching full growth. As the nights were growing colder I brought the two larvæ indoors, and placed them in the window of a room facing south. The full-fed larva continued to eat a little until the 13th inst., and during the night of the 17th inst. completed pupation. Twenty days afterwards, on Nov. 6th, fearing the pupa might perish, I removed it to the warmer atmosphere of the kitchen, taking the precaution to place a wet sponge in the breeding-cage. On the evening of the 9th inst. a female imago emerged, but, unfortunately, it proved to be a cripple. This may have been caused by being exposed to too high a temperature, as the larva appeared to be perfectly healthy up to the time of pupating, and I have little doubt would have emerged by the 11th or 12th inst. had it been allowed to remain in the cooler room. It will be observed from the preceding notes that these larvæ were fed under perfectly natural conditions, and therefore it is reasonable to conclude that many other individuals of a second brood of *A. iris* have appeared in the New Forest during the present year.—C. H. WATSON; Streatham Hill, S.W., December, 1893.

SECOND BROOD OF *LARENTIA VIRIDARIA* (PECTINITARIA).—Major Still, in his remarks on second broods of Lepidoptera in 1893 (Entom. 18), expresses himself doubtful whether a few specimens of the above-named species, met with at the beginning of September, ought to be regarded as a second brood or not, and states that he has never met with it so late before. I do not recollect having seen a second brood recorded, but I think there can be very little doubt that, as with so many species which ordinarily hybernate in the larval state, a few forward larvæ do feed up rapidly, and produce imagines in the early autumn. At Sandown I took a few specimens of *L. viridaria* in September, 1891 and 1892, but have never seen the species there during July or August. This exactly bears out Major Still's experience; and the similar occurrence in three consecutive years certainly goes against the idea that the September specimens might be merely casual examples of retarded emergence.—LOUIS B. PROUT; 12, Greenwood Road, Dalston, N.E., January 11th, 1894.

MACROGLOSSA STELLATARUM AND COLOUR.—In reference to the abstract from the paper by Mr. Shaw (Entom. 21), is it not a fact that insects continue to visit the same species of flower during several successive hours? for if, on the contrary, an insect were first to visit a primrose, then a violet, and then a geranium, although the insect itself might feel no ill-effects, yet I fail to see how cross-fertilization of the flowers mentioned could be effected; and it would be even more difficult to account for those scarcer flowers which are more or less sparsely distributed in every locality. But in such a case as this a few

simple observations are better, and (if accurate) must yield far truer results, than any theorising, however plausible the latter may appear. I think that the point has been determined in the case of bees; but I do not recollect having heard of any systematic series of similar observations on butterflies or moths, and I am sure that such would be quite worth making. Since in all departments of science one branch is continually encroaching on those around it, and since this seems to be especially the case with the kindred branches of zoology and botany, I do not think it is necessary for me to make any apology for introducing a note dealing largely with botanical subject-matter in an entomological magazine. Referring again to Mr. Shaw's most interesting paper, I do not think that the *Viola* in question was necessarily more attractive to humming-bird hawk-moths in general than the double geranium, but merely that this particular specimen had acquired a taste for that particular kind of nectar on the day in question.—F. P. BEDFORD; 326, Camden Road, N., January 2nd, 1894.

I was much interested in reading Mr. Shaw's notes upon the habits of *Macroglossa stellatarum* (*ante*, p. 21). It is a striking instance of the chromatic sight of insects. The occurrence he observed is, I think, in opposition to the general rule, viz., that inconspicuous flowers are less fertilised by insects than bright-tinted ones. Perhaps the honey-cells in the particular flower of which he speaks are so placed as to be out of reach of the ordinary bee, and have by Natural Selection become specially suited to the taste and habits of night-feeding insects. If this were so, their pale cream-colour would render them more conspicuous at night than the darker-hued blossoms, causing them to be more frequently visited, and therefore fertilised by moths and other night-flyers. Although *M. stellatarum* is a day-flying species, it perhaps still retains the same tastes as the nocturnal moths. Also, it would doubtless find the nectaries in a moth-fertilised flower in a position better suited to the shape of its trunk than in those of any bee-attracting varieties. There are some species of *Viola* which, as Darwin mentions, are dimorphic in their flowering; that is, with some flowers devoting all their efforts to attract insects, so as to secure the advantages of crossing; while others, by growing entirely self-fertilising, prevent the species from becoming extinct, in the event of an absence of bees and other honey-feeders. Is it not possible that the bright colours of some of the species of *Viola* have at a former time been evolved for the purpose of alluring insects, but that these agents, having from some cause or other become scarce, have compelled the plants to make themselves independent of outside help, by becoming self-fertilisers? Then, although the nectarial glands, through their causing a waste of energy, may have gradually diminished, the colours of the petals—by not exerting an influence, either for good or bad, over the welfare of the plants—may have been allowed to remain in their old conditions. I should like to know if Mr. Shaw's plants differed in any marked degree in the internal structures of their flowers, and if all or any part of them were visited by other insects.—ALFRED J. JOHNSON; Boldmere, January, 1894.

GLYPHISIA CRENATA.—In your notice of the Burney sale, you mention that two examples of this rare species only brought 8s. and 15s.



respectively. This price must have been either a good deal too little or a great deal too much, probably the latter. Most of your old readers are doubtless aware that but three captures of this species have been recorded. The first, an imago, was discovered by my good friend the late Mr. Henry Doubleday, at Ongar Park wood, in June, 1839; and another was taken in the same locality in June, 1841 (see Humphreys and Westwood, vol. i. p. 73). It then disappeared for nearly twelve years, when a solitary larva was beaten from poplar at Halton, Bucks, and was duly recorded ('Zoologist,' 4336) in the autumn of 1853, and again in the spring of 1854, thus:—"Note on *Gluphisia crenata*.—The larva taken by me at Halton, on poplar, on the 18th of August, 1853, and supposed to be *G. crenata*, produced that insect on the 4th of March, 1854, and which was exhibited by Mr. Douglas at the April meeting of the Entomological Society.—(Signed) JOSEPH GREENE; 49, Stephen's Green, Dublin, April 15th, 1854" ('Zoologist,' 4336). That was forty years ago, since which date there does not appear to be any notice of further captures. Here we have an indigenous British insect, the origin of which nobody doubts, which has, apparently, two broods a year, which in all likelihood might be bred as freely as the rest of its family, if the chance occurred, whose larva is most conspicuous, and whose food is found all over the country, which has escaped the vigilance of the collecting fraternity up to date. Still we all know that insects do "disappear" (what a capital word to express our own ignorance!). Just to give a few examples:—There was *Sesia chrysidiformis*, of which Francillon, in days long gone by, took a single specimen, which remained undetected till Brewer found it, and "consigned it to the undignified depths of his 'bacca-box'; and yet this pretty little clearwing had been flitting about the Folkestone Warren in comparative abundance, for years and years, quite unnoticed and unmolested. Then there was *Clostera anachoreta*, discovered in the neighbourhood of Salisbury by Mr. Spratt, who took two specimens some forty years before Mr. Sidney Cooper beat a couple of larvæ from sallow at Saltwood, Kent (beating may be an unscientific, happy-go-lucky method of collecting, but still it is very useful). Then, again, *Dianthæcia albimacula*, discovered by Mr. Bydden sitting on a post near Birchwood, Kent, remained unique for goodness knows how long, chiefly because collectors, perhaps misled by Boisduval, did not know the time of year to look for it, or the way to go to work. The case of *Erastria venustula*—which "disappeared" at first for forty years, and afterwards for fifteen more, owing to our ignorance of its habits—is too well known to require repetition. Numerous other instances might be quoted, but I have already occupied too much of your valuable space. I will, however, just add that in my opinion there is no earthly reason why the lost *Glyphisia* should not again be found, if sought for carefully, perseveringly, and intelligently.—H. GUARD KNAGGS; Folkestone, January, 1894.

CEROSTOMA COSTELLA AND C. RADIATELLA.—This season I have had a large experience with the former, and found it most abundant, almost exclusively among nut: I swept some hundreds of grand forms off the dead twigs. If anyone wants specimens, I have them. Of *C. radiatella* I only took very few, not over half-a-dozen. There was only one oak



tree. Some years ago I bred a large number of them from larvæ beaten off oak at Arnside: there were no other trees. This year I got a few when beating *Argyresthia aurulentella* from juniper. There was almost a gale blowing, which frequently overturned my umbrella; still I boxed 120 fine *A. aurulentella* in an hour. I noticed that as soon as in my umbrella, they instinctively tried to get back to the juniper.—J. B. HODGKINSON; Preston, Dec. 10th, 1893.

NEMOPHORA PILELLA.—I have been reading over the account of my discovery of this neat “long-horn” in Ent. Mo. Mag., but I do not see any mention of my finding larvæ, which no doubt were those of *N. pilella*, when beating *Vaccinium* for larvæ of *Hypsipetes elutata*. I put all the rubbish into a large flower-pot in the garden. During the autumn several larvæ, with their funny bug-like cases, crawled up and attached themselves to the side of the pot, where they remained until spring. I paid no further attention to them, not thinking at the time of the habits of the *Adela* group.—J. B. HODGKINSON; Dec. 10th, 1893.

LYCÆNA ACIS IN SUFFOLK.—I forget whether I have previously recorded the capture of this species in Suffolk. In 1861, Mr. Garratt Garratt of Ipswich, took a fine male specimen of *L. acis*, flying in company with *L. ægon*. He thought it looked different, so sent it to me, together with a gynandrous example of *L. ægon*. I returned the example of *L. acis*, and told him to look out for more; but although he captured a good number of *L. ægon* he failed to secure another specimen of *L. acis*. Probably, however, the head-quarters of the latter species were not far off. This season odd examples of *L. astrarche* var. *salmacis* were observed among *L. ægon* flying on the mosses; but as the food-plant of the former grew a considerable distance away, it is probable that the insect had resorted to the wet mosses as a change from the hot limestone of its proper home.—J. B. HODGKINSON. [“Very rare. Foxhall Heath, one specimen, June 24th, 1861, *G. G.*”—Rev. E. N. Bloomfield’s ‘Lepidoptera of Suffolk,’ p. 7.]

BISTON HIRTARIA AND CLEORA VIDUARIA IN SCOTLAND.—Turner, a noted collector, especially of beetles, told me, when he was visiting Preston on his way to Scotland to look after *Asteroscopus nubeculosa*, that he had bred a specimen of *C. viduaria* from a pupa he found near Kinloch, Rannoch; also *B. hirtaria*. I questioned him very closely, and suggested that probably he had found the pupa of *C. viduaria* in the New Forest, and taken it with him to Rannoch. He declared most emphatically that he had not taken any pupæ with him. He knew *C. viduaria* well, in fact anything that would sell; and as far as I knew he was to be trusted. Some one may say it might be *cinctaria*, which I knew E. C. Buxton took freely in Scotland. I called Turner’s attention to this; but he adhered to what he had told me.—J. B. HODGKINSON; Preston.

A BUTTERFLY WITHOUT A PRICE.—“In their quest of new species of butterflies, enthusiastic collectors are willing to face the fevers of the swamps, the attacks of wild men of the jungles, and look upon thirst, hunger, and tropical heat as inconsiderable trifles. The finest collection in the world—not excepting that in the British Museum—is

that of Mr. Berthold Neumoegen, of New York, who has spent a fortune in his search for rare specimens. Butterflies have the same market quotations as rare stamps. Professional dealers issue catalogues, in which one finds the names, with prices affixed. These prices vary from a few pence to £25. But fine 'types,' beautiful and rare 'varieties,' and 'uniques,' are practically priceless. For example, one of the gems of the Neumoegen collection is the wonderful *Papilio neumoegeni*. This insect, the only one of its kind ever captured, was taken in the Island of Sumbawa, south-east of Java. Received in a shipment from his collector, Mr. Neumoegen at once concluded that it was new to science. He sent it to Europe, risking its loss, and experts there decided that he was right. Honrath, the celebrated entomologist, begged the privilege of describing it, and named it in honour of its discoverer. It has figured recently in the annals of the Berlin Entomological Society. It is of a wonderful metallic green. Special expeditions have been sent to the locality several times since, in the hope of finding another, but this one still remains unique. Asked its value, Mr. Neumoegen answered: 'Who can say? It is the only one in the world. Suppose you offer me £50, which I certainly would refuse, I could say to you, "I will give you £100 for its mate," and you could never fill my order. Then it is worth £100, is it not? But it is worth more, for money cannot buy it.' Mr. Neumoegen is a stockbroker on Wall Street." The above appeared in 'To-Day,' Dec. 9th, 1893.—J. ARKLE; Chester.

PUPATION OF EPINEPHELE IANIRA.—Dr. T. A. Chapman (*ante*, p. 23), remarking upon the probable cause of the bleached patches on the wings of butterflies, states that "*ianira* pupates in a flimsy cocoon low down towards the roots of the grass." This is so contrary to the mode of pupating of this species that I should like to know if Dr. Chapman has ever found pupa of *E. ianira* in a cocoon? The pupa of this butterfly is merely suspended by the anal extremity to a pad of silk spun upon a stem of grass, and is not enclosed in any kind of cocoon whatever.—F. W. FROHAWK; 39, Dornton Road, Balham.

VARIETY OF CHRYSOPHANUS (POLYOMMATUS) PHLÆAS.—On Sept. 18th, 1893, I captured, at Hereford, a white variety of *Polyommatus phlæas*. All the parts which are usually copper-colour are silvery white, with a very slight tinge of cream at the base of the wings.—H. W. BLATHWAYT; Frome Bank, Bromyard, Jan. 16th, 1894. [The specimen is referable to the uncommon form of *C. phlæas* var. *schmidtii*, mentioned Entom. xxvi. p. 305.—ED.]

ACHERONTIA ATROPOS.—With reference to the subject of his note (*ante*, p. 19), Mr. J. B. Williamson will probably be interested to learn that four nearly full-fed larvæ of *A. atropos* were found here between the 9th and 15th of July last, in situations exactly similar to that described by him. Against the front walls, and close beside the doors of three adjoining cottages, in one of the streets, some plants of *Lycium barbarum*, the "tea-tree," are trained, and on these the larvæ were feeding. One larva, which I sent away, was a nice brown variety, resembling in general appearance and pattern that figured in Buckler's 'Larvæ of British Butterflies and Moths,' vol. ii. plate xxi.



fig. 1 a, but differing from it in that the first few segments showed a delicate pink in place of the white; the body was entirely brown of various shades, with no trace of red in it, and the horn was ivory-coloured instead of brown as in the figure. Of the others, which were typical, one came to an untimely end at the hands of an old woman, the occupant of one of the cottages, who, feeling sure that it must be "a locust," flattened it with a brick (1); while from the remaining two the imagines appeared on October 10th and 11th, but unfortunately both of them failed to expand their wings, and resulted in cripples.—EUSTACE R. BANKES; Corfe Castle, Dorset, Jan. 17th, 1894.

THE BURNEY COLLECTION (HETEROCERA, continued from p. 25).—One lot of useful Noctuæ, among which were eight examples of *Cymatophora octogesima* (= *ocularis*), was knocked down for 20/-; but for the next lot, which was similar, and contained a specimen of *Bryophila algæ* in addition, the price only rose 4/- higher; and another lot, in which there was also an example of *B. algæ*, but no *C. octogesima*, went for 12/-. Two lots of *Acronycta strigosa* (9) and *A. alni* (8) fetched 30/- and 25/- respectively. There were fourteen examples of *Synia musculosa* and ten of *Leucania vitellina*, and these were offered, at first, in lots comprising two of the former and one of the latter, and sold at 45/- and 42/- per lot; afterwards two specimens of each species were put up in a lot, and realised from 27/6 to 40/- a time. Two examples of *S. musculosa*, with other things, made 20/-. The first of three lots of *L. albipuncta* (4 specimens in each) sold for 32/6, but the other two lots went for 22/- each. Two lots of very useful *Leucania*, each including an example of *L. extranea*, were disposed of at 18/- and 14/-; two other lots, each containing a specimen of *L. l-album*, went for 8/- per lot; another lot, with two *L. l-album*, made 10/-, and a nice parcel of five *L. obsoleta*, six *L. putrescens*, with one *L. l-album*, and others, ran up to 28/-. Lot 380, "*Flammea* 5 fine, *Ulvæ* 6, two var. *bipunctata*, and one var. *nigrostriata*," sold for 30/-, but a similar lot only realised 16/-. Four lots of nice species, including two *Tapinostola concolor* in each, were disposed of at 10/- a time for the first three lots, but the fourth dropped to 8/-; and a lot of *T. hellmanni*, *N. neurica*, &c., with an example of *concolor*, made 10/-. *Nonagria brevilinea* were put up three or four at a time, with short series of other decent species, and were purchased at 11/- 15/- and 26/- per lot. *N. sparganii* realised 5/- and 6/- apiece. There were seventeen specimens of *Xylomyges conspicillaris*, and these were offered five and six in a lot with other desirable species, the prices obtained being equal to about 3/6 per specimen for the *conspicillaris*. *Laphygma exigua*, of which there were ten examples in the collection, ranged in price from 3/6 to 17/6. *Pachetra leucophæa* did not meet with much support, the eighteen specimens offered failing to find customers at anything over 3/- each, and some of them went for much less. The type of *guenéei*, Doubleday (*Luperina testacea* var.), was disposed of for £2 15s., and a cotype was knocked down for £3 15s. An example of *Luperina dumerili*, and one of *Crymodes exilis*, with four specimens each of *Mamestra abjecta* and *L. cespitis*, found a purchaser at 35/-. Two pairs of indifferent *Hydrilla palustris* were sold at 26/-



and 30/- per pair. *Agrotis ashworthii* made from 2/- to 2/6 apiece. *Noctua subrosea* brought out some spirited bidding at first, but this was not maintained throughout; there were six lots, two specimens in each, and the prices realised were £6 6s., £5 5s., £4 10s., £3 5s., £2 5s., and £2, and for one female 12/-. *Noctua sobrina*, with some vars. of *N. castanea*, only fetched about 1/- each, whilst specimens of *Pachnobia hyperborea* (*alpina*) were to be obtained at less than 2/- a time. *Cerastis erythrocephala* found purchasers at 4/- to 10/- each, but *Dasyampa rubiginea*, if allowance be made for other insects in the lots with them, did not average much more than 1/3 per specimen. One lot of *Dianthæcia albimacula*, four *D. casia*, and seven *D. irregularis* fetched 21/-; *D. luteago* var. *barretti* (18 specimens), sold at 7/6 and 8/- each, and *Polia xanthorista* var. *nigrocincta* at about 4/-. There were three specimens of *Hadena porphyrea* (*satura*), but these were not much sought after; lot 514, which contained an example of this species, together with *Trigonophora flammea* (= *empyrea*) (5), *H. rectilinea* (6), and others, only realised 6/-, and for a similar lot there was no bid until it was offered with the next, also similar, when the combination was knocked down for 6/-. A specimen of *Hadena peregrina*, "taken by Mr. W. Wigan at sugar, near Lewisham, Aug. 20th, 1868," went for 6/-, as also did another example, "taken at Freshwater, Isle of Wight, 1868," while for a third there was no offer until it was put up with the next lot, which contained still another *peregrina*, and some useful species of *Hadena* (29 specimens), when the entire parcel was disposed of for 10/-; a fifth example of *peregrina*, "taken at Eastbourne, 1870 (received alive)," and nice series of *contigua*, *glauca*, *suasa*, &c., sold for 6/-. *Xylina furcifera* (= *conformis*), of which species there were thirteen specimens, fetched 4/6 to 5/3 each; an example of *Xylina lambda* var. *zinckenii*, "taken by S. Harrington at New Cross, 1866 (vide 'Entomologist,' iii. p. 205, and 'Ent. Annual,' 1867, p. 136)," was sold for 30/-, and an example of the type-form of the same species (*lambda*), "received amongst some common autumnal Noctuæ, collected at Rye in October, 1871," found a purchaser at 32/-. A specimen of *Cucullia artemisia* (*abrotani*), "found with series of *C. absinthii*, and had been overlooked by Mr. Burney," was sold for 40/-. *C. gnaphalii* (12 specimens) realised 8/- to 10/6 each. A lot, including among other things ten specimens each of *Heliothis peltigera* and *H. armigera*, was cleared at 12/-; and a specimen of *Acontia solaris* var. *albicollis*, "taken by Rev. Percy Andrews in a clover-field at Brighton, Aug. 25th, 1859," induced bidding up to 30/-, at which price the hammer fell. *Thalpochares ostrina* did not engage much attention, as two lots each, comprising two examples of this species, with nice series of *Bankia argentata*, *Brephos notha*, and others, only fetched 6/- and 5/-. A specimen of *T. paula*, "taken by Mr. J. Moore at Freshwater, Isle of Wight, June, 1872," was sold for 10/-; whilst two other examples of this species, with good series of *Hydrelia uncula* (= *unca*), *B. notha*, &c., realised only 5/-. *Ophiodes lunaris* was another insect that buyers did not seem to be particularly "gone on"; one lot, containing an example of this species, four *Toxacampa eracca*, and other species, sold for 6/-, and a similar lot for 8/-. Two lots of *Madopa salicalis* (5), and other useful Deltoids, went for 10/- a lot, and

the bidding for eight *Aventia flexula*, one *Zanclognatha emortualis*, and several other good species, only rose to 6/-. Two examples of *Boletobia fuliginaria*, included in lot 220, only fetched 6/-; whereas lot 221, in which were two other specimens, made 22/-. The fourth and concluding section of this Report, dealing with the Geometræ and Pyralides, will appear in the March 'Entomologist.'—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

AUTUMNAL EMERGENCE AND VARIATION OF ARGYNNIS PAPHIA.—During the past autumn I succeeded in rearing a second emergence of *A. paphia* (Entom. xxvi. p. 320). When I exhibited the specimens at a recent meeting of the South London Entomological and Natural History Society, Mr. Tutt stated that he had lately seen examples of a second brood of *A. paphia* in the collection of Mr. J. A. Clark, who had obtained them from the New Forest during the autumn. Again, at a meeting of the above-named Society held on Oct. 12th last, Mr. J. H. Carpenter exhibited a very fine series of white-spotted forms of *A. paphia*, numbering some three dozen specimens; Mr. Tutt then alluded to Mr. Clark's "remarkably fine series" of white-spotted forms, stating that many of them had patches of the green colouring of the var. *valesina* represented in both sexes. As I had never observed any trace of the green hue of *valesina* in the white-spotted males, although frequent in the white-spotted females, and as I was not aware of a second brood of *A. paphia* having occurred in a state of nature, I thought it desirable to communicate with Mr. Clark on the subject. In his reply to me that gentleman writes, "My specimens are *not* the second brood; they were taken in the months of June and July." As he kindly invited me to examine the white-spotted forms in his collection referred to by Mr. Tutt, I recently availed myself of the opportunity, accompanied by Mr. Carpenter. We were somewhat surprised to find that the "remarkably fine series" in question consisted of only eight specimens, six males and two females, and upon careful examination we were quite unable to detect the slightest trace of any green colouring in any of the males, although it was present in both the females. In the December No. of the 'Record' (vol. iv. p. 331) Mr. Tutt, in his notes upon *A. paphia*, says, "However, a most remarkable series of such specimens was this year got together by Mr. J. A. Clark." . . . "This year Mr. Clark has a number of specimens in which these pale spots are very conspicuous, but the most interesting point in connection with these is that some of the specimens have a large area round these spots distinctly of the *valesina* colour, shading off into the normal coloration round the outer margin of the wing. Still more strange is the fact that this is *not entirely confined to the female specimens*, *valesina* being distinctly a female aberration." (The italics are mine.) What is Mr. Tutt's reason for making such erroneous assertions, both as regards the second broods and the variation in colour, for which he has apparently no foundation? So far as can be ascertained, no sign of a second emergence of *A. paphia* has occurred in the New Forest during the past autumn.—F. W. FROHAWK; January, 1894.



## CAPTURES AND FIELD REPORTS.

**COLIAS HYALE IN DORSET.**—With reference to Mr. Banks's remarks (Entom. 32), it may be of interest to note that I captured, during the great *C. edusa* emergence of 1877, two specimens of *C. hyale* at Upway, a village midway between Dorchester and Weymouth. They were flying over a red clover field in company with swarms of *C. edusa*, and were easily picked out. During a residence at Upway, from 1875 to 1881, these were the only *C. hyale* I ever came across, and this fact appears to confirm Mr. Banks's statement that *C. hyale* seldom ranges so far west. I had previously taken three *C. hyale* in Oxfordshire in 1867; one more I obtained in Berkshire in 1892. The six specimens are in my collection, and constitute my series.—J. CLARKE; Reading, January 2nd, 1894.

**COLIAS EDUSA IN 1893.**—My only experience with this insect, this season, has been one specimen (seen but not captured) a few miles north of Christchurch, Hants, on Aug. 26th; and two specimens, both males, between Hartland and Clovelly, N. Devon, on Sept. 30th. There was a somewhat violent wind prevailing on the latter date, and I was enabled to take up one of these *C. edusa* between the finger and thumb, from off the head of *Scabiosa succisa*, on which it was feeding. I can testify to the scarcity of this butterfly in Surrey, at all events in the Dorking neighbourhood, this year, as I gave special attention to clover fields, and other likely places about here, during the end of July and first three weeks of August, without seeing a single specimen.—R. M. PRIDEAUX; Ashted, Surrey, December 28th, 1893.

**LEPIDOPTERA IN THE NEIGHBOURHOOD OF YORK, 1893.**—The season which is now rapidly drawing to a close, and which will long be remembered meteorologically, on account of the marvellous weather experienced, has not been equally memorable for quantity or quality of Lepidoptera noticed. Many generally common insects have been either very rare or else entirely absent. The only species which have been more than usually common at York this season are the following:—*Pieris brassicae*, *P. rapæ*, *Vanessa urticae*, *V. atalanta*, *Acherontia atropos*, *Sphinx convolvuli*, *Macroglossa stellatarum*, *Orthosia suspecta*, *Anchocelis litura*, *Phlogophora meticulosa*, *Hadena protea*, *Asthena sylvata*, *Venusia cambricaria*, *Lobophora lobulata*, *Collix sparsata*, *H. [? Lomaspilis] marginata*, *Thera variata*, *Diurnea fagella*; whilst of those which have not occurred in anything like their usual numbers, the following, amongst many others, may be quoted:—*Zygana lonicerae*, *Lithosia mesomella*, *Spilosoma lubricipeda*, *Acronycta leporina*, *Noctua festiva*, *N. rubi*, *Agrotis porphyrea*, *Tæniocampa populeti*, *T. leucographa*, *Epione vespertaria*, *Aspilates strigillaria*, *Eupithecia satyrata*, *Acidalia immutata*, *Hypsipetes elutata*, *Phibalapteryx lignata*, &c. Of those species which have entirely failed to put in an appearance, and which we generally take each season in some numbers, are *Nudaria senex*, *Hydrelia unca*, *Plusia festucae*, and *Miana arcuosa*. My first outing took place on Feb. 14th, in quest of var. *fuscata* of *H. marginaria*, of which I took six; my last on Nov. 3rd, when sugar produced but a few *S. satellitia* and *C. vaccinii*. *H. aurantiaria*, *H. defoliaria*, *C. boreata*, and *C. brumata* were very scarce, whilst *O. dilutaria* and *H. pennaria* were not seen. I have noticed the gradual diminution in point of numbers of these species for the past ten years; each year they become scarcer in this neighbourhood, why I know not.



My worst outing produced five moths, my best 253; altogether this season I have set considerably more than 3000 specimens.—W. HEWETT; Howard Street, York, November 11th, 1893.

NOTES FROM READING.—On May 3rd, 1893, I took *Agrotis cinerea*, and on Aug. 4th *Charæas graminis*, both at light — the first time I have taken either species in this district. On May 29th *Dipterygia scabriuscula* (*pinastri*); and a second brood, I suppose, on Aug. 9th; I have never seen a second brood before. On Sept. 27th *Xylina semibrunnea*, at sugar; and on the 29th twenty-five specimens of *Ocnomera femorata*, also at sugar. On Jan. 13th of the present year I took *Hybernia rupicaprararia*, and on the 21st *Phigalia pedaria* (*pilosaria*), also *Hybernia leucophæaria*. Is not this very early for the latter species?—W. E. BUTLER; Hayling House, Reading, Jan. 22nd, 1894.

NOTES FROM GOSPORT.—In this district *Colias edusa* has occurred very sparingly this year, about half-a-dozen specimens only having been seen. I took a fine male on Sept. 3rd in my garden, and that represented the sum total of my captures. *Vanessa cardui* also has been very scarce. Treacle was nearly useless during the spring months, but insects came freely to it during the autumn, good captures being made.—W. H. MACKETT; Science and Art School, Gosport, December, 1893.

EARLY OCCURRENCE OF PHIGALIA PEDARIA (PILOSARIA).—On Jan. 20th I captured two good specimens of this insect on a fence in Epping Forest. This is the earliest I have ever found it, hitherto dates in February having been the rule.—F. W. FREIR; Elm House, Walthamstow.

HYBERNIA DEFOLIARIA IN JANUARY.—I took this insect on the 20th of this month in Epping Forest, but was rather puzzled to account for it. In a previous volume of the 'Entomologist' I notice records of its appearance in February, 1890. The specimen I caught was the dotted variety figured by Newman, and was in good condition.—F. W. FREIR; Jan. 22nd, 1894.

CHEROCAMPA CELERIO IN SUSSEX.—The occurrence of this fine hawk-moth at Littlehampton is worth noting. Staying there recently I made the acquaintance of Master Herbert Percy Gibbons, at Surrey House. Master Herbert is quite an ardent young collector; he showed me his boxes, and was quite proud of his "yellows," "humming-birds," "privets," &c.; one of the latter, by-the-bye, was really a fine example of *Sphinx convolvuli*; but I soon noticed rather a dilapidated specimen in a corner of the box; it was *C. celerio*, and was given to him by the gardener at Surrey House, who caught it "at rest" the summer before last. I told Master Percy what a prize it was. It is now being relaxed prior to re-setting, and with a little "doing-up" it will make a very fair specimen. This is the second I have in my cabinet.—CLARENCE E. FRY; Watford, Herts, January, 1894.

ABUNDANCE OF WASPS.—*Vespa germanica*, *V. vulgaris*, and *V. norvegica*, the three commonest species in this district, were exceptionally common in Cheshire and North Wales last year; the two former absolutely swarmed.—R. NEWSTEAD (Curator); Museum, Chester, Jan. 2nd, 1894.

HYBERNIA LEUCOPHÆARIA, &c.—Miss Maude Alderson states that *H. leucophæaria* was well out on Jan. 17th, at Worksop, Notts. Mr. D. P. Turner writes from Tonbridge, Jan. 13th, "The weather is unusually mild

just now. Although not directly connected with Entomology, it may be of interest to record that I saw a bat flying about at dusk on the 11th of this month; it must have been perplexed at the absence of its usual food." Some time during the week ending Jan. 20th a bat was captured, by Mr. D. Cross, in a house near Marlborough Road Station, St. John's Wood.  
—Ed.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—December 6th, 1898.—Henry John Elwes, Esq., F.L.S., President, in the chair. Mr. W. F. Kirby exhibited, for Dr. Livett, a series of specimens of a moth taken at Wells, which Dr. Livett considered to be varieties of *Dasycampa rubiginea*, but which many entomologists present thought were varieties of *Cerastis vaccinii*.\* Mr. Kirby added that specimens similar in appearance to those exhibited had been taken rather freely during the past autumn in Berkshire, and it was suggested that they might be hybrids between *D. rubiginea* and *C. vaccinii*. Mr. Lovell Keays exhibited, for Mr. A. L. Keays, a series of *Lycæna alexis*, with confluent spots on the under sides of the front wings. He drew attention to the fact that the insects were all taken within a short radius, and probably were in the ratio of about one in forty with reference to the ordinary form. All the examples, with one exception, were females. Mr. Lovell Keays remarked that he had some years ago met with a similar brood near Weymouth, in which the confluent spots were, as far as the specimens collected by him extended, entirely confined to females, and in that instance the proportion was much higher. Prof. S. H. Scudder, of Cambridge, Mass., U.S.A., stated that he had observed the occurrence of broods of *Chrysophanus phleas* with suffused spots in America, but they were not confined to any special locality. Mr. C. O. Waterhouse exhibited the type-specimen of *Coptomia opalina* of Gory, from the Hope Collection at Oxford, and pointed out that it was quite distinct from *C. mutabilis*, W. The distinct punctuation of the whole insect, and the striolate pygidium in *C. opalina*, were sufficient to distinguish it at once. Mr. Waterhouse called attention to this, as some French entomologists maintain that these insects are the same species. He also called attention to *Silpha atomaria*, of Linnaeus (Syst. Nat., ed. xii., i., p. 574), a Swedish species which appeared to have escaped notice, and was not included in any catalogue. The type is still extant in the Linnean cabinet, and Mr. Waterhouse said he was of opinion that it is *Olibrus geminus* of our collections, but he had not had an opportunity of making a critical examination. He also exhibited male and female specimens of a *Helopeltis* (the Tea-Bug), which he considered a distinct species, and stated that it had occurred only in Assam. Mr. M. Jacoby exhibited certain species and varieties of the genus *Ceroglossus* from Chili, and Dr. D. Sharp, Mr. J. J. Walker, and Mr. Champion made remarks on their geographical distribution. Prof. Scudder exhibited the type-specimen of a fossil butterfly—*Prodryas persephone*—found in beds of Tertiary Age at Florissant, Colorado. He said the species belonged

\* See note, ante, p. 61.



to the *Nymphalidæ*, and the specimen was remarkable as being in more perfect condition than any fossil butterfly from the European Tertiaries. He also stated that he had found a bed near the White River on the borders of Utah, in which insects were even more abundant than in the Florissant beds. Dr. Sharp, Mr. Kirby, Mr. H. Goss, and the President took part in the discussion which ensued. Mr. Goss exhibited hibernating larvæ of *Spilothyrus alcea*, which had been sent to him by Mr. F. Bromilow from St. Maurice, Nice. Mr. W. F. H. Blandford read a paper entitled "The Rhynchophorous Coleoptera of Japan. Part III. Scolytidæ." The President, Dr. Sharp, Mr. Champion, Mr. McLachlan, and Mr. J. J. Walker took part in the discussion which ensued concerning the distribution of the group and the admixture of Palæartic and Oriental forms in Japan. Mr. G. T. Bethune-Baker read a paper entitled "Notes on some Lepidoptera received from the neighbourhood of Alexandria," and exhibited the specimens. Mr. McLachlan suggested that the scarcity of insects in Lower Egypt was possibly to be accounted for by the fact that much of the country was under water for a portion of the year; and Dr. Sharp said that another cause of the scarcity was the cultivation of every available piece of land for centuries past. The President and Mr. J. J. Walker continued the discussion. Mr. C. O. Waterhouse read a paper entitled "Further observations on the Tea-Bugs (*Helopeltis*) of India." Dr. F. A. Dixey communicated a paper entitled "On the Phylogeny of the *Pierinæ*, as illustrated by their Wing-markings and Geographical Distribution."—H. Goss and W. W. FOWLER, *Hon. Secs.*

January 17th, 1894.—*The 61st Annual Meeting.*—Mr. Frederic Merrifield, Vice-President, in the chair. An abstract of the Treasurer's accounts, showing a balance in the Society's favour, having been read by Mr. J. Jenner Weir, one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1894:—President, Mr. Henry J. Elwes, F.L.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. Walter F. H. Blandford, M.A., F.Z.S., Mr. Charles J. Gahan, M.A., Mr. Frederic Merrifield, Prof. Edward B. Poulton, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., Mr. George H. Verrall, Mr. James J. Walker, R.N., F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. Mr. Merrifield then read the President's Address, in which, after alluding to the principal events of the past year, and the prosperous condition of the Society, he referred to the additions which had been made in 1893 to the literature of Entomology, calling attention to the 'Butterflies of China and Japan,' by Mr. J. H. Leech; the 'Moths of India,' by Mr. G. F. Hampson; the 'Butterflies of North America,' by Mr. W. H. Edwards; 'Lepidoptera Indica,' by Dr. F. Moore; and the continuation of the 'Biologia Centrali-Americana,' by Messrs. F. D. Godman, F.R.S., and Osbert Salvin, F.R.S. He also commented on the recent publications of the Grand Duke Nicholas Mikhailovitch, Mons. Charles Oberthür, and Dr. Staudinger, on the Continent. The President concluded by referring



to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Prof. H. A. Hagen, M.D., the Rev. Leonard Blomefield, M.A., Mr. A. C. Horner, M.R.C.S., Prof. J. Wood-Mason, the Rev. Henry Burney, M.A., Mr. J. C. Bowering, F.L.S., the Rev. F. O. Morris, B.A., Mr. J. Batty, Mr. Francis P. Pascoe, F.L.S., Herr Eduard Honrath, and Dr. Adolph Speyer. A vote of thanks to the President for his Address was proposed by Colonel Swinhoe, seconded by Mr. Jenner Weir, and carried unanimously. Mr. Merrifield replied for the President. Lord Walsingham proposed a vote of thanks to the Officers of the Society; this was seconded by Mr. Waterhouse, and carried unanimously. Mr. McLachlan and Mr. Goss replied, and the proceedings terminated.—H. Goss, *Hon. Sec.*

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*November 23rd, 1893.*—J. Jenner Weir, Esq., F.E.S., President, in the chair. Mr. Carpenter exhibited captured specimens of *Argynnis paphia*, from the New Forest, one male and one female having a portion of the right primary in each with a whitish ground; also a non-metallic intermediate var. *valesina*. Mr. Frohawk, specimens of *A. paphia* and var. *valesina* which had emerged on Nov. 20th and 21st, having been kept at the ordinary temperature. He also reported having bred *Vanessa atalanta* this month, and that the *Apatura iris* of Mr. Watson had emerged, but was a cripple. A long discussion ensued regarding the second broods of the Argynnidae, the metamorphoses, which usually take eight or nine months, being in these cases completed in as many weeks, the general opinion being, however, that temperature by itself had very little influence. Mr. Sauzé, types of Coleoptera taken by himself this year. Mr. Weir, *Lycæna trochilus* from the South African Republic, sent by Dr. Rendall, *Lycæna exilis* taken at Las Cruces by Prof. Cockerell, and our British *Lycæna minima* for comparison. He remarked on the undesirability of giving comparative names, the two former species measuring 15 mm. in expanse of wings, while the latter varied from 17 mm. to 22 mm. Mr. Adkin, two specimens of *Chrysophanus* (*Polyommatus*) *phlæas*; in one the copper band of the hind wings was all but obliterated, and in the other represented by narrow streaks on the wing rays.

*December 14th.*—The President in the chair. Mr. South exhibited continental specimens of *Argynnis adippe* var. *cleodoxa* and var. *chlorodippe*, both from South Europe; a variety of *Thecla rubi*, from Ireland, the upper side of which was very dark, while there was no green on the under side, yet the white spots were strongly developed; also *Syrichthus malva* var. *tarus*, from Devon, where it was stated to be not uncommon. Mr. Pearce, a long series of *Chrysophanus hypophlæas*, series of *Colias philodice* with pale var. of the female, *Terias nicippe* with yellow form of male, *Pieris rapæ*, and various species of Lycænidae, all from Alleghany Co., U.S.A.; also *Nathalis iole* from Colorado. A discussion ensued as to whether *C. hypophlæas* should be considered a species. Mr. Weir, *Planema euryta*, an Acræine butterfly in which the sexes differed materially in colour and still more in shape, yet in each of these respects it was mimicked by the corresponding sexes of *Pseudacraea nirce*, a Nymphaline species, all from the Cameroons. Mr. Turner, a long bred series of *Thera juniperata*, arranged to show the

varied interruption of the band across the fore wings. Mr. Billups, the rare Dipteron, *Diastata basilis*, from Bromley, Kent, and hitherto unrecorded as British; also the following species of Ichneumonidæ bred by the members:—*Ichneumon fuscipes*, bred from larvæ of *Acronycta myricæ*, by Mr. Short; *Rhizarcha areolaris*, from the dipterous larvæ of *Phytomyza aquilegiæ*, by himself; *Colas dispar*, from larvæ of *Melitæa aurinia*, by Mr. Frohawk; *Ichneumon pyrrhopus*, from *Eupithecia helveticaria*; *Glypta bicernis*, from *Tortrix palleana*; *Anomalon cerinops*, from *Heliothis dipsacæ*; and *Lissonota sulphurifera*, from *Sesia scoliiformis*; all bred by Mr. Adkin. Mr. Adkin, a varied series of *Tæniocampa gothica* from Rannoch, also yellow varieties of *Zygæna trifolii* from W. Sussex.

January 11th, 1894.—The President in the chair.—Mr. Adkin exhibited several series of *Thera juniperata*, L., from various Scotch localities, contrasting them with those exhibited, at the meeting previous, from Purley. Mr. Oldham, varied series of *Hybernica defoliaria*, L.; *H. aurantiaria*, Esp., from Epping Forest; and a specimen of the local *Libellula quadrimaculata*, L., from Cambridgeshire. Mr. South, some remarkable vars. of *Cerastis vaccinii*, L., taken in Kent and Surrey, with British and Continental specimens and varieties of *C. ligula*, Esp. (*spadicea*), and a specimen of *Acronycta aceris* var. *infuscata*, Haw. Mr. W. A. Pearce some very beautiful Rhopalocera from Alleghany, U.S.A., taken in 1893., viz., *Papilio asterias*, Fab., *P. turnus*, L., *P. philenor*, L., *P. troilus*, L., *Limenitis dissippus*, Gdt., *L. ursula*, Fab., and *Apatura elyton*, Bd. Mr. Weir mentioned that the female of *P. turnus* was dimorphic, and that *L. dissippus* was the mimic of *Anosia plexippus*. Mr. Auld, *Vanessa io*, which had been cleaned by Dr. Knaggs with methylated ether, and which had regained its pristine appearance. Mr. Tugwell sent for exhibition a long series of *Spilosoma lubricipeda*, Esp., and its various varieties and local races, especially of var. *radiata*, Haw., = *zatima*, Cr., and communicated notes, in which he described the York city form as var. *fasciata*. He had also sent for exhibition a pair of *Plusia moneta*, Fab., bred by Mr. Matthews; two varieties of *Arctia villica*, L., from Harwich; three dark Irish forms of *Agrotis lucernea*, L.; a long series of *Liparis monacha*, L., from New Forest ova, some of which were very dark; six of the dark Sheffield form of *Boarmia repandata*, L.; vars. of *Lycæna ægon*, Schiff., from Westmoreland; four *Dicranura bicuspis*, Bork., from Tilgate; a series of *Callimorpha hera*, L., bred from Starcross ova; a pair of *Pachetra leucophæa*, View., taken by Mr. Hanbury on the North Downs; several *Noctua conflua* from Shetland; six of the remarkable dark Irish form of *Camptogramma bilineata*, L., and a series of *Noto-donta dromedarius*, L.—HY. J. TURNER (Hon. Report Sec.).

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—Dec. 11th, 1893. The monthly meeting was held in the Free Library, Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. C. H. Schill, of Manchester, gave "A few introductory remarks on the genus *Vanessa* and its allies," and showed the ease with which exotics could now be obtained from friends residing abroad. He stated that it was almost necessary to work single groups and become specialists thereon, rather than attempt to form gigantic collections of whole orders, of which it



was almost impossible to obtain a complete knowledge. He then described the chief points of difference for separating the genera and species, illustrating his remarks by a number of closely connected species of the genus. Mr. C. G. Barrett, of London, explained and discussed Mr. Merrifield's recent experiments on the effect of temperature on the genus *Vanessa*. Mr. C. E. Stott read a few remarks upon *Amphophila lutaria*, Fab., and showed a specimen captured near Blackpool in July, 1892. Mr. Harker exhibited living specimens of a *Corynetes* feeding in Copra from Singapore, and *Sesia scoliiformis* from the North of Scotland. Mr. Newstead, a nest of *Vespa vulgaris*, from Malpas, Cheshire, which was built to a rafters inside an outhouse, a most unusual position; and *Sphæroden cylindricum* and larvæ from a pear tree near Chester. Mr. Herbert Stott, a remarkable variety of *Celena haworthii* from Bolton, 1893. Mr. Gregson, a specimen of *Heliothis peltigera* captured at Wallasey in 1887. Mr. Watson, a number of *Parnassius apollo* from various localities, also *P. hardwickii* from N. W. Himalaya, *P. jacquemontii* from the same locality, *P. glacialis* from Yokohama, *P. smintheus* from Colorado, *P. phæbus* (Fab.) = *delius* (Esp.) from Helvetia, showing female pouch, and *Enycus cressida* from Queensland, also showing the female pouch.

*Annual Meeting.*—The Annual Meeting was held on Monday, Jan. 8th, 1894, in the classroom of the Free Public Library (William Brown Street), Mr. S. J. Capper, President, in the chair. The following officers were appointed:—President, Mr. S. J. Capper; Vice-President, Dr. J. W. Ellis; Secretary, Mr. F. N. Pierce; Treasurer, Mr. C. E. Stott; and Librarian, Mr. H. Lock. The President, in the course of a short address, thanked the members for the honour they had bestowed upon him in re-electing him as President. This was the seventeenth time he had acted in such a capacity. He congratulated the Society on its continued success. They were now entering on their seventeenth year, and it was most gratifying to state that they had never been in a more prosperous condition than at present. The sudden death, a few months ago, of the Rev. H. H. Higgins deprived them of one of their most prominent members. They always welcomed his kind face among them at their gatherings, and listened with attention to his ever pertinent remarks. In the Rev. H. H. Higgins they had lost a member whom it was impossible to replace, and few men were such lovers of natural history as was their late friend. The retiring Vice-President, Mr. W. E. Sharp, delivered the annual address, the subject of which was "The New Entomology." The author, after briefly sketching the origin and historical development of Entomology, drew attention to the manner in which that study had been influenced by the modern methods of scientific enquiry, and showed how great a revolution had been effected in the estimation of nature by the general acceptance of the theory of evolution, and how wider, fuller, and more important the study of the order Insecta had become since it had been treated as part of the great science of Biology, and appreciated the fact that Entomology meant something more than merely the collection and systematic arrangement of insects. In the course of the evening a number of exhibits were displayed.—F. N. PIERCE, *Hon. Sec.*



**BIRMINGHAM ENTOMOLOGICAL SOCIETY.**—November 20th, 1893.—Mr. R. C. Bradley in the chair. Exhibits:—By Mr. E. C. Rossiter, insects from Arley, including *Aplecta tincta*, *Hadena contigua* and *H. proteus*; also one specimen of *Xylophasia scolopacina* from Shut Mill. By Mr. A. H. Martineau, *Macroglossa stellatarum* from Solihull and Abersoch in North Wales, and one specimen of *Sesia cynipiformis* from Wyre Forest; also male specimens of three species of bees from Nevin in N. Wales—*Bombus muscorum*, *B. sylvarum*, and *B. cognatus*—all easily distinguished from one another by the arrangement of the hairs, and remarkably alike in appearance. By Mr. R. C. Bradley, males, females, and neuters of *Vespa crabro* from Astwood Bank; also *Ammodia sabulosa* from Cannock Chase, for which species Mr. Saunders, in his 'Hymenoptera Aculeata,' Part iii., gives no midland localities. By Mr. W. Harrison, a nest of *Bombus cognatus*—males, females, and neuters—from Harborne; also a box of Lepidoptera taken during the trips of the Society to the Cotswolds in June last, and including, in addition to species taken by other members, *Nemeobius lucina*, *Euchelia jacobæ*, and *Nemeophila plantaginis*, male and female, &c. Mr. F. W. Urich, of Trinidad, communicated a paper entitled "Wayside Notes of a Naturalist;" it described a walk in the neighbourhood of Port of Spain, with many observations upon the habits of the insects, &c., met with. A number of photographs of the district were shown, also a box of insects which had been collected during one week, to show what might be done there; the box contained about 50 dragonflies, and over 180 Lepidoptera, &c.

December 18th.—Mr. G. H. Kenrick, F.E.S., Vice-President, in the chair. Exhibits:—By Mr. R. C. Bradley, *Polyommatus phlæas*, from Sutton and Knowle, a short and very variable series. Mr. G. T. Bethune-Baker referred to Mr. F. Merrifield's breeding experiments with *P. phlæas*, as recently described before the London Entomological Society, and said that Mr. Merrifield found that he got darker and duller colours with heat, and paler and brighter ones with cold; Mr. Bradley, however, had taken his lighter specimens in Sept. and Oct., and they had probably therefore been bred during hot months. Mr. Bradley also showed five species of Diptera, all new to the British list, namely, *Dactylolabis gracilipes*, Lw., *Goniomyia jecunda*, Lw., *Ephelia varinervis*, Ztt., *Clinocera lamellata*, Lw., and *Didea fasciata*, Macq. Mr. G. T. Bethune-Baker, *Crambus furcatellus*, *C. ericellus*, and *Psodos coracina*, all from Rannoch. Mr. G. H. Kenrick, a boxful of insects taken by himself in Sutherlandshire this autumn, and including *Calocampa solidaginis*, *C. vetusta* (common), *C. exoleta*, *Epunda nigra*, *Noctua umbrosa*, *Agrotis suffusa*, &c.; he said that the specimens of *C. solidaginis*, of which he took a nice series, were lighter and greyer than our Cannock ones. Mr. W. Harrison, three boxes of Hymenoptera taken during the year, and including *Andrena trimmerana* from a spot in Edgbaston, where he has seen it for several years; this year, for the first time, he has seen and taken the parasite, *Nomada alternata*, and it was commoner than its host; there were also in the boxes *Halictus smeathmanella*, *Mimesa dahlbomi*, *Crabro unicolor*, *Celiopsis vectis*, *Osmia bicolor*, &c. Mr. Martineau, a box of Hymenoptera taken this year, including *Crabro interruptus* taken at Middleton Woods, *Mimesa dahlbomi* from

Wyre Forest, and *Agania variegata* from Selsley, Glos. Mr. Wainwright, three boxes containing his collection of the Syrphidæ. Mr. G. W. Wynn, a box of Lepidoptera taken this year, including *Notodonta chaonia*, *Hadena genistæ*, *Thecla rubi*, and others, from Wyre Forest. Mr. H. J. Sands, some fine specimens of *Vespa crabro*, from Alvechurch, where it has been unusually abundant; also a series of *Demas coryli* from the Chilterns, Oxfordshire, *Botys hyalinalis* from Wyre, &c. Mr. E. C. Rossiter, *Polia chi*, *Melanippe hastata*, *Cherocampa porcellus*, *Aspilates strigillaria*, *Cerigo matura*, &c., all from Wyre Forest; also *Calymnia affinis* from Clent.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

NOTTINGHAM ENTOMOLOGICAL SOCIETY.—A meeting was held on Oct. 16th, when an exhibition of specimens taken this year was given, many excellent specimens being shown by the various members. On Nov. 6th a microscopical evening took place. Mr. Allen and Mr. Marshall kindly brought their microscopes, and a very instructive evening was spent. The meetings continue to be held on the first and third Fridays each month, at the Morley House. Local entomologists are cordially invited to attend.—C. WHITEHALL, *Hon. Sec.*

STREATHAM ENTOMOLOGICAL CLUB.—A meeting of this Club was held at Streatham Hill on January 22nd, C. H. Watson, Esq., in the chair. There was a full attendance of members. There were several interesting exhibits of local and general interest, including fine vars. of *Abraxas grossulariata* by Mr. J. Henderson. Some very instructive remarks were made upon this exhibit by Messrs. F. W. Frohawk and J. H. Carpenter. Other exhibits were *Argynnis aglaia* and *A. adippe*, from the New Forest; also the specimen of a second brood of *Apatura iris* by Mr. C. H. Watson (see *ante*, p. 61). A discussion followed on the local fauna, and Messrs. Mark Winkley and Alex. C. Forrester suggested that it would be desirable for the Streatham Entomological Club to proceed at once with the formation of a reliable local list.—JOHN HENDERSON, *Hon. Sec.*; 7, Pinfold Road, Streatham, S.W.

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—The following is a list of the varieties and local forms of Lepidoptera exhibited at the museum, York, by the members of the York Society, during the past season (1893):—By the President (Mr. G. C. Dennis), a living bred specimen of *Spilosoma lubricipeda* var. *radiata* from Barnsley. By Mr. R. Dutton, forms of *Abraxas ulmata* and *S. lubricipeda* (York form); a variety of *A. grossulariata*, York; forms of *Asphalia diluta* and *Hadena protea*, selected from a great number of specimens taken this season at sugar; also a fine bred hermaphrodite specimen of *Epione vespertaria*, from York. By Mr. S. Walker, a number of varieties of *Orthosia suspecta*, taken this season at York; also *Boarmia rhomboidaria* var. *perfumaria*. By Mr. G. Jackson, a large number of exceptionally fine varieties of *S. lubricipeda*, bred from larvæ obtained during the past few seasons in the neighbourhood of York, none of them approaching “à beaucoup près” the var. *radiata*; and Mr. Jackson stated that although he had bred this species largely for a number of years he had never been so successful as to obtain this variety. By Mr. J. Hawkins, *Hybernia progenmaria* var. *fuscata*, York; numerous specimens of *Tephrosia biundularia* var. *delamerensis*, together with



intermediate forms, bred this season, from York; and *Zygæna lonicera* var. *semilutescens*, bred, York. By Mr. W. Hewett, *Acronycta ligustri* var. *olivacea*, Driffield; dark forms of *Luperina testacea*, from Hartlepool and Darlington; varieties of *S. lubricipeda*, from Driffield, Barnsley, Darlington, and York (one from Driffield having the hind wings of the var. *radiata* colour, *i. e.*, smoky black, the base, wing-rays, and fringe alone being cream-coloured; the head and thorax cream-coloured; the body yellow, with six black spots down the middle and on each side; the antennæ simple; the fore wings typical); an exceedingly fine variety of *Arctia caia*, from Hull (this variety has the fore wings of an almost uniform brown colour, the hind wings, with the exception of the base and fringe, being black); forms of *Orthosia pistacina*, selected from numerous examples taken at Hull; variable series of *Tæniocampa gothica*, selected from more than 800 bred specimens, Darlington; dark melanic form of *Smerinthus populi*, of a uniform smoky black, from Beverley; variety of *Vanessa c-album*, having the hind wings of a uniform chocolate colour, Yorks; *H. progemmaria* var. *fuscata*, York; also a long bred series of *T. bim-dularia* var. *delamerensis*, York; melanic forms of *Diurnea fagella*, Sledmere; a very dark variety of *A. grossulariata*, having the fore wings almost entirely black, from Beverley, and a dark variety from Driffield; long and variable series of *Lomaspilis marginata*, from York; two suffused examples of *Ephyra pendularia*, York; light forms of *A. ulmata* from Sledmere, and black forms from Edlington Wood near Doncaster; also a very light (almost white) specimen of *A. ulmata*, and a peculiar lead-coloured variety of same species from Drewton Dale, Yorkshire, 1893; pale variety of *S. populi*, Hull; two dark forms of *Odontopera bidentata*, Hull; forms of *Anchocelis litura* and *A. pistacina*, from York, Beverley, Poeklington, and Holtby; very dark forms of *Noctua xanthographa*, Yorks; two varieties of *Venusia cambricaria*, from Sledmere; varieties of *O. suspecta*, York; *Z. lonicera* var. *semilutescens*, York; variable series of *Apamea fibrosa*, from Wicken Fen; a fine variety of *V. urticae*, bred about the year 1877, Beverley; also some fine dark varieties of *A. grossulariata*, bred this season at York; and two very pale varieties of same species from Yorkshire.—WILLIAM HEWETT, *Hon. Sec.*; December, 1893.

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## RECENT LITERATURE.

*Brief Guide to the Commoner Butterflies of the Northern United States and Canada.* By SAMUEL HUBBARD SCUDDER. New York: Holt & Co. 1893. 12mo, 12 + 206 pp.

THE author has in this work carried out an excellent idea of aiding the beginner in the study of the butterflies which he would probably meet with, in the area indicated, during the first year or two of industriously collecting. The description of each species is lucidly given under the three heads of Butterfly, Caterpillar and Chrysalis; then follows an account of the form and structure of the egg, the mode of oviposition, and the food-plant of the larva, together with much interesting matter completing the life-history of the insect.



In order that the tyro entomologist may not in his early career be troubled with too much Latinity, the four families of butterflies are named "Brush-footed Butterflies" = Nymphalidæ, "Gossamer-winged Butterflies" = Lycænidæ, "Typical Butterflies" = Papilionidæ, and "Skippers" = Hesperiidæ, and the subfamilies have also English names. Three keys to the various groups are given, based on the perfect Butterfly, the Caterpillar, and Chrysalis respectively; these are drawn up with great care, and will doubtless be of great use to the student, even though he may have made much progress in his studies.

Mr. Scudder's classification is doubtless that which places the families of butterflies in their proper sequence; and it is much to be regretted that the entomologists who deal with our native species, still persist in interposing the four-legged Nymphalidæ between the two six-legged families, the Papilionidæ and Hesperiidæ: those who wish to be enlightened on this subject cannot do better than read the reasons Mr. Scudder gives for the mode of classification he has adopted.

Those who confine their studies mainly to our British species of Rhopalocera will find valuable life-histories given of *Anosia plexippus*, *Vanessa cardui*, *V. atalanta*, *Euvanessa antiopa*, and of species very closely allied to British, viz., *Aglais milberti*, congeneric with *A. urtica*; *Polygonia progne*, *faunus*, *comma*, and *interrogationis*, all four more or less resembling *P. c-album*; *Cyaniris pseudargiolus*, almost identical with *C. argiolus*; *Heodes hypophlæas*, little more than a geographical race of the only other species of the genus, our familiar *H. phlæas*; and *Pieris oleracea*, only slightly differentiated from *P. napi*; *Pieris rapæ* has been introduced from Europe, and is now a very destructive species both in Canada and the United States.

The book is on the whole an excellent introduction to a knowledge of the life-histories of the species treated of, and will be followed by 'A Student's Manual of the Butterflies of North America, North of Mexico,' as announced on the fly-leaf at the beginning.

J. J. W.

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*Victorian Butterflies, and how to collect them.* By ERNEST ANDERSON and FRANK PALMER SPRY. Part I.; Complete, with Index. 8vo, pp. 80. Melbourne: H. Hearne & Co. 1893.

A WELL-WRITTEN little book, including recognisable woodcuts of the Papilionidæ and Nymphalidæ found in Victoria, as well as of their larvæ, so far as known. It will not only be useful in Australia, but also to those who are commencing the study of Exotic Butterflies, by familiarising them with the Australian species, while the attention paid to the larvæ by the authors adds a real scientific value to this unpretentious little work. The second part, including the Lycænidæ and Hesperiidæ, is, we are informed, in progress, and will be issued shortly. We believe that copies may be obtained in London from Mr. J. A. Clark, 48, The Broadway, London Fields, Hackney.

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ERRATUM.—In the Catalogue of Irish Lepidoptera (*ante*, p. 13), at the close of the notice of *Hepialus velleda*, after the words "Co. Sligo, &c.," should be inserted *Hepialus lupulinus*, L.

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## THE NEW ENTOMOLOGY.\*

BY W. E. SHARP.

NEARLY twenty years have elapsed since the members of this Society were privileged to listen to the first of its President's Addresses. Since that day members have come and gone, the Society has shared in the mutations inevitable in human affairs, and very few of those I see around me to-night were, I think, present on the occasion of that Inaugural Address. But we all know that, year by year, since then we have heard an annual compendium of entomological progress, and an epitome of whatever notable achievements each year has brought.

You will therefore readily appreciate my difficulty in adding to such a series, and I trust extend to me your forbearance in the task laid upon me; for to worthily follow such a part, and tell you, as our President would have done, all that might be worth telling of the result of the labours of the entomological world, now so large and so enterprising, during the year 1893, is, as I am only too conscious, a work beyond my powers.

With your permission, then, I will take a more general survey, and allow myself to dwell this evening on the wider and more abstract subject of the present position of entomological science. And I am the more disposed to bring this matter before you because I think that, to any one at all conversant with the progress of Entomology, it must be apparent that of recent years that study has assumed a wider horizon, and taken to itself new and perhaps even more fascinating methods.

We are all of course aware that Entomology is at best but a partial science, that it is in reality a small fragment of the great Science of Biology. Yet Entomology and Entomologists existed before ever Biology, under that name, was invented; and it is,

\* Annual Address delivered before the Entomological Society of Lancashire and Cheshire, January 8th, 1894.



perhaps, worth while considering how and to what extent the advent of the science has affected and shaped the course of the study.

I said there was an Entomology before Biology began to be—that simply means that the observation of a particular part of animated nature necessarily preceded the intellectual comprehension of such observations and their fusion into some ordered theory of life; in other words, we must have the observer before the theorist, the quarryman before the architect, although the theorist and the architect may be the greater. Thus our first Entomologists were simply observers who recorded what they saw without troubling themselves with problems which seemed to them insoluble, or theories which appeared baseless or unnecessary.

Now the beginnings of the systematic observation of Nature are lost in the night of ages. Perhaps, had we that missing work of the great Israelitish Sultan, which—so we are told by the author of 'The New Atlantis'—was preserved among the archives of the city of Bensalem, we might find the first entomological treatise. Solomon certainly appears to have observed to some purpose the laborious commonwealth of the ants, and evidently knew more about Arachne than did Ovid, although the Roman poet supplies us with particulars of her evolution in a more dramatic form. However, as that monarch's detailed notes on Natural History are unfortunately lost beyond hope of recovery, we must turn from the Semite to the Greek, and find in Aristotle the first mind of the ancient days who seemed to consider the natural world at all worth investigation. Nor will I detain you long with the great Stagirite, although few intellects of wider grasp have appeared on the human stage, and although he must ever be the patron saint of all who lean to the scientific method of enquiry into natural phenomena. For Aristotle was the first to demonstrate that Nature was an entity, *in itself* worth investigation,—that, besides art or the apprehension of the beautiful, there was another and a worthier function of the human faculties, science or the apprehension of the true: this was his great service to all time, and not the record of any particular observation or experiments.

From Aristotle to Gesner, the Swiss, seems a far cry, a sweep of some eighteen centuries. Yet in the interval no name stands out conspicuously that of a naturalist. Conrad Gesner was the first whose mind, touched by that rising intellectual tide which we call the Renaissance, took the direction of the study of Nature. The work was carried on by the Dutch Swammerdam, the English Ray, and the great Swede Karl Linné, commonly known as Linnæus. These were the days of the Encyclopædic systematists. A modern naturalist, such as that typified by Dr. Holme's Scarabee, finds the work of a lifetime in a department



of a subsection of Nature, a family of the Coleoptera, the Fauna of an islet.

To Linnæus the stupendous task of the entire classification of organic nature did not seem too vast or too laborious.

Later still we find naturalists who were content to be Entomologists merely, and shrank from annexing the whole of created life for their province. Such were the Scandinavians Schönherr, Gyllenhall, and DeGeer; Fabricius, the Dane; and above all Latreille, the French abbé. It was the work of such men as these which consolidated and shaped the study of insects into an accredited department of Zoology, and formed the framework of our modern Entomology. This was in the early years of the present century; and among all the nations of Europe, but more especially among the Teutonic peoples, the study was cultivated by a few observers who—although they added much to the great mass of ascertained knowledge—earned, generally speaking, but a mild contempt from their public, not so much because the objects of their care were in themselves unworthy or puerile, as because they lacked that touch of the transcendental fire of science which redeemed the efforts of the astronomer and the physicist.

For consider how the standpoint of all these workers, from Fabricius down to Edward Newman, differed from or fell short of ours; and great names they were in their generation, and much solid knowledge and irrefutable information we owe to their endeavours—Marsham, McLeay, Kirby and Spence, Westwood, Curtis, Stephens, Doubleday, Newman, Stainton, to cite only a few, and these our own countrymen.

Now consider for a moment, and with all respect to such past masters in Entomology, how limited was their sense of the domain they were investigating. They may all be divided roughly into two great categories—observers such as Newman and Kirby, systematists like McLeay or Westwood. Of course the majority were both; but we can separate the result of their labours, at any rate, under these two heads. Yet these observers, patient and reliable as were their researches, valuable as was the knowledge of Nature they acquired and bequeathed to us, never seemed to trouble themselves about the *meaning*, the *why* of phenomena, the *how*; the *methods* of things were enough for them. They desired simple facts, and enquired no deeper, sought no further into the reality which might underlie the apparent.

Was the habitat of *Erebia epiphron* or *Miscodera arctica* only the barren mountain tops? Was one insect restricted to a single island or tropic river valley, and another, like *Vanessa cardui*, abundant from China to Peru? Does one form correspond in perfect harmony of colour with its surroundings, while another

glaringly contrasts with them? The mere facts were enough; why ask for reasons? so they were created in the beginning, so they would remain to the end; the only part for these students of Nature was to silently accept such arrangements as they found extant,—recondite speculation into their meaning and origin seemed to them to belong to a sphere into which it was almost impious, and certainly useless, to attempt to penetrate.

And the systematists, the workers in the study and the museum more than in the field, fared still worse. The observers did their work well, and laid foundations of solid knowledge which have since endured; but they were content with too little. The systematists started from the first from defective premises. Consider the endlessly complicated system of Stephens or of Westwood, and the elaborately symmetrical one of McLeay and Swainson, with their equal series of pentagons throughout all animated nature. What vast ingenuity, what endless toil! The whole the result of the hopeless endeavour to treat Nature as on one plane. Entangled and confused by their futile attempts to reduce all creation to some iron-bound theoretical conformity, they missed the inner meaning of half the phenomena they were investigating; embryology in our sense of the word gave them no light, and all those variations from type and deviations from the normal, which are such an interest, such a delight, and so suggestive to us, to entomologists of this period were nothing better than an embarrassment and a nuisance, unaccountable and unmeaning freaks of Nature, which refused to fall into their systems, and even threatened that stability and independence of specific form which was the root idea of all their theories.

Now if I seem to lay too heavy a stress on the defects of the older Entomologists, let it be seen that my purpose is to demonstrate, if possible, how wider, fuller, more really scientific, what I venture to call the *New Entomology* is than the old; what I mean by the old Entomology I date from the birth of the study as a distinct department of Zoology, or from the time of Latreille to the death of Edward Newman, whom I regard as typifying almost the last of the old school.

And one consideration strikes me at this point, that is, that the *New Biology*, which of course dates from the publication of the 'Origin of Species,' by no means synchronizes with the *New Entomology*. The contrast is indeed rather noteworthy between the comparatively little use Darwin himself made of inferences drawn from Entomology in original support of his theory, and the vast mass of confirmatory evidence since supplied by that branch of study. As a matter of fact I think the Entomologists of the fifties and sixties were too busy describing new species, formulating new genera, investigating insect morphology for the



purpose of upsetting old, or establishing new arrangements—all genuine and indispensable work, the fruits of which we to-day enjoy, for we have to a greater extent than we can always appreciate entered into possession of their labours. They were, I say, so intent on this purely departmental work, so to speak, as to miss the consideration of the wider issues involved in that new aspect of Nature as a whole which was then beginning to surprise and captivate scientific Europe. Thus it seems that quite a long interval elapsed from the general provisional acceptance of the theory of Evolution by Biologists, before Entomologists as such (with indeed some notable exceptions, as Wallace and Bates) turned their attention anxiously to the subject, and began to see how Entomology under that influence might rise from a study to a science, how on the entomological arena some of the toughest biological battles might be fought, and how, by entomological methods, some of her profoundest secrets might be wrested from Nature.

This new departure, then, seems to be both so recent and so distinct as to justify me when I refer to it as the *New Entomology*. Its key-note is *Synthesis*, while that of the old school was *Analysis*. The disciples of the latter supposed that when every insect form in the world had been described and catalogued, and the whole of the order finally and unanimously arranged in methodical series of divisions, then their warfare would be accomplished and their occupation gone. We, on the contrary, know that even with such work perfected our real labours would be but begun.

The generation of students who were content when they had arranged in their cabinets irreproachable specimens of, say, all the known species of Vanessidæ, carefully neglecting all varieties or aberrations as blind and inexplicable errors on the part of Nature, have almost ceased to be. We not only require all known species of any group we may be studying, but we must have illustrated as well the whole gamut of variation; nay, more, we must submit larvæ and pupæ to strange conditions, freeze them and force them with a Merrifield and a Weisman, and induce variation unknown before,—our aim the discovery of some aboriginal form, some proto-Vanessid, an abstraction our fathers never so much as dreamt of; and to trace the broken lines of convergence, and elucidate the fragmentary records of descent, we study not only the morphology but the embryology of a group, not only normal but more especially varietal forms. So each spot and each line has its meaning and its derivation, and points backwards to some common origin, some type in which the present differentiation might have been originally merged. The runes of the mackerel's back were said of old to convey to him who could read them the darkest secrets of fate; more suggestive to the modern entomologist and more legible are the primæval hieroglyphics of the butterfly's wing. Consider, again, colour



and markings, not in relation to descent but to environment, and as the result of adaptation. Such matters were formerly held as ultimate facts; a moth was either grey or white because its nature compelled it so to be; the case admitted no further investigation. Now, however, the specialization of colour and form is a distinct department of Biology, and we have books such as Poulton's 'Colours of Animals,' a work of the deepest interest, treating of a subject which simply had no meaning a generation ago.

(To be continued.)

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### AMONG THE DRAGONFLIES IN 1893.

By W. J. LUCAS, B.A.

THE bright and forward spring of 1893 saw the dragonflies, like other insects, very early on the wing. My first capture was a specimen of one of our noblest species, *Libellula quadrimaculata*, Linn., which was taken in Surrey on April 30th, by the edge of the Black Pond in Claremont Woods, near Esher. Later in the season this locality proved a splendid one for the species. These insects, however, were none too easily taken, for they delighted to forage up and down, usually out of reach of the net, over the surface of the lake, or amongst the lofty reeds that fringe its boggy margin.

*L. quadrimaculata* makes a grand show in the cabinet; for, whatever may be true of some other species, this one, if only the contents of abdomen and thorax are removed, loses scarcely any of the splendours with which it was adorned when living. The empty shell retains not only its shape, but its colour too. I use no stuffing, nor does any appear to be needed.

This neighbourhood, as well as other districts in the same part of Surrey, yield in good numbers a closely related insect, *Platetrum depressum*, Linn. The treatment mentioned for *L. quadrimaculata* succeeds even better, if possible, with *P. depressum*. Should, however, the blue-powdered male show signs of grease, it may be removed with benzine, chloroform, or ether: I have had but one specimen so affected. The earliest specimens of this species, both male and female, that fell under my notice occurred in the New Forest, near Lyndhurst, on May 7th. The pursuit of *P. depressum* is a somewhat exciting matter, and its capture often requires a considerable amount of perseverance; for though the insect does not appear to be at all timid, it is nevertheless very restless. After allowing one to approach almost within striking distance it suddenly darts off, but as likely as not returns almost directly, and, may be, to the identical spray from which it started. Patience, however, usually finds our friend a prisoner in the end.

Seldom have I had the pleasure of witnessing a more interesting sight than the cloud of dragonflies that rose and filled the air as I approached the sunny banks of the Mole and neighbouring pools at Esher on May 14th. All but one specimen belonged to the remote-eyed section, *Agrionina*, but of these there were countless individuals of several species, among them being *Calopteryx splendens*, Harris, *Pyrrosoma minium*, Harris, and *Agrion puella*, Linn., at least. These being all slow flyers, one was able to admire to the full the gorgeous colours of their bodies, or, in the case of *C. splendens*, the rich green or blue gauze of their wings. The last is indeed a glorious insect, but withal a clumsy one, and in my opinion not able to compare in grace of form with many of the members of the other section, *Libellulina*. One only of this section was taken that day, a good specimen of *Brachytron pratense*, Müller, which after being followed for some considerable time up and down the margin of a pool which it had chosen to haunt, and from which, after the manner of *P. depressum*, it was not easily scared, was at last secured.

On May 22nd the Black Pond was alive with *L. quadrimaculata*, but they were not easily captured, while its banks swarmed with the smaller *Agrionina*, most of them being *A. puella*. I also took one specimen of *Cordulia aenea*, Linn., flying near the edge of the pond, and on May 28th saw two others, but could not catch them.

On July 28th I took *Æschna grandis*, Linn., in Bagley Wood, Berks, and, in the same locality, an *Æ. cyanea*, Müller, on August 26th.

On August 17th a few males of the genus *Calopteryx* were still flying over the surface of the Wye at Symond's Yat, and after some difficulty one was secured.

On Sept. 9th, in Bagley Wood, Berks, a male *Æ. cyanea* was sighted hawking along the side of a hedge. It presently made for a small butterfly, which looked like *Polyommatus phlœas*, and after circling round it several times, as if for the purpose of examination, secured it, and then began wildly careering about, as if rejoiced at its own dexterity. While thus engaged, a wing of the butterfly was seen to fall, and presently *Æ. cyanea* settled on the hedge, where it appeared to be further stripping its captive. I shortly afterwards caught the dragonfly, and found the body of the butterfly still between its jaws.

After some weeks' absence I again visited the Black Pond at Esher on Sept. 13th, and three specimens of *Sympetrum scoticum*, Don., were taken, two males and a female. The same day a specimen of *A. puella* was caught. About the same day I received a living female of *Æ. cyanea*.

On Sept. 17th several *S. scoticum* were seen (three taken) by the side of the Black Pond. They were not much in evidence when the sun was not shining, and even when on the wing did

not move very quickly. Their flight, indeed, seems to be weak, but their colour renders it difficult for the eye to follow them when they are flying. They occasionally, especially if disturbed, soared away among the firs, but more commonly kept near the reeds and beds of *Sphagnum* which covered the now dry margin of the pond. One or two specimens of *A. puella* were still about, and one was taken.

My last captures of the season were made at the same place, on Sept. 24th. They consisted of a few specimens of *S. scoticum* and one of *A. puella*.

The neighbourhood of Esher is clearly a very prolific one; I myself took during the season at least eleven species there, and saw three others, but could not secure any specimens. Let us hope that the drought of 1893 may not affect their numbers in the season that will now so soon commence.

2, Gordon Road, Kingston-on-Thames, Jan. 9, 1894.

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## SIX YEARS' ENTOMOLOGY IN CO. GALWAY.

BY THE HON. R. E. DILLON.

HAVING collected Lepidoptera, chiefly in this neighbourhood, during the last six years, I find that some of my captures prove of no ordinary interest. Last year I submitted my collection to Mr. H. de V. Kane for examination, and he identified all my specimens, and informs me that he considers this locality surprisingly rich, and that I should do well to publish a list of the rarer insects. Although unwilling to do so at first, owing to the risk of attracting undesirable collectors, as this estate is strictly preserved, it seems necessary that full particulars should be placed on record as to the occurrence of such rarities as *Naclia ancilla*, *Cloantha polyodon*, *Leucania extranea*, &c., as well as others that are new to the Irish list.

I therefore have yielded to Mr. Kane's suggestion and have put down those which seem to be of interest on account of local distribution in Ireland, as well as all rarities. I should say that at first I kept a meagre diary, and failed to identify several insects, in some cases not being satisfied as to their identity, on account of their rarity. In such cases I cannot give exact dates. In other cases, such as *Xanthia aurago*, *Cirrhædia xerampelina*, I made sketches of the insects in my diary, which Mr. Kane at once recognised.

This district, characterised by a great variety of physical features comprising extensive oak woodlands, bogs with very diversified and interesting flora, interspersed with arable and grass lands on the limestone formation. The climate is mild,



but not so much so as that of the sea-coast of this county, which is distant about thirty miles at the nearest inlet, namely, Galway Bay. It is remarkable that some of the insects taken here are, I believe, usually confined to the sea-coast

At the beginning, not being acquainted with many of the *Eupithecia* and small Geometers, I neglected to work for them, which accounts to a certain degree for only single specimens, and the list therefore does not fairly represent the proportionate abundance of the local species of the group.

I hope it will be understood that, where no locality is given for the capture of any insect in the following list, the insect in question was taken in this demesne. Except during the visits of Mr. Kane and Mr. G. V. Hart, all insects were taken by me, with the assistance of the gamekeeper, Francis Mason, or during my occasional absences by the latter alone. A great number were taken in an illuminated moth-trap. During the early spring and summer of 1893, I had the advantage of working here with Mr. Kane, and I feel I must express my great indebtedness to him for his unvarying kindness, not only in identifying my insects, but for much valuable help and instruction in the study of entomology and the practical working of it, which he has so generously accorded me ever since I have had the pleasure of his acquaintance.

#### RHOPALOCERA.

*Gonopteryx rhamni*. Not uncommon; a few seen every year; fairly common in 1887. One female taken late in the year with semi-circular cusps in fore wings; now in Mr. Kane's cabinet.

*Argynnis adippe*. I took several specimens in 1887; one specimen, July 3rd, 1893.

*Melitæa aurinia*. Fairly common. I have never seen any varieties here.

*Vanessa io*. Fairly common. I saw more in 1893 than in any year before. I took one, Christmas Day, 1892.—*V. atalanta*. Very abundant. I have also taken several hybernated specimens. *V. cardui*. A few specimens are seen yearly; never abundant.

*Satyrus semele*. Not common, I took one very ruddy female, almost approaching var. *aristæus* (cf. Mr. Kane's list of Irish Lepidoptera).

*Epinephele tithonus*. One specimen.

*Thecla quercus*. Occasionally seen here. I took one at Dalyston Wood, at Kilglaunah, June 21st, 1893, with Mr. Kane, Loughrea, Co. Galway.—*T. rubi*. Common. I secured a curious aberration in June, 1893, which Mr. South has kindly described on page 17 of this volume.

*Lycæna astrarche* var. *artaxerxes*. I took specimens of this, July 3rd, identified by Mr. Kane. I have taken other specimens here before, which have been destroyed through neglect. I believe it appears here every year in small numbers.

## HETEROCERA.

*Acherontia atropos*. I have never taken a specimen here, but I saw one on a wall near my moth-trap. One previously had been found in the dining-room in the morning.

*Smerinthus ocellatus*. Very abundant. Several specimens were taken this year in my moth-trap and, except the year 1893, I could have brought in from thirty to forty larvæ whenever wanted.—*S. tiliæ*. I have taken several specimens here, but it is very far from common. One specimen which Mr. Kane has preserved has been described by him. All taken flying about lime or privet at dusk.

*Sesia culiciformis*. I took two specimens hovering over some bramble-bushes, June 25th, 1893. Mr. Kane showed me many birch-logs perforated by the larvæ.

*Naclia ancilla*. Two taken flying at dusk in the wood (oak).

*Nola cucullatella*. I took six specimens, July 18th and 19th, and August 15th and 21st; also I have an old worn insect taken in 1888, which I believe to be referable to the same species.

*Calligenia miniata*. I have taken several specimens both at light and flying at dusk, at the end of June and July.

*Gnophria rubricollis*. Only one specimen has been taken alive, although I have picked up several dead on roads.

*Spilosoma fuliginosa*. Several specimens; one yellow variety described by Mr. Kane in his Catalogue of Irish Lepidoptera and now in his cabinet. (cf. 'Entomologist.')—*S. mendica*. One male of a smoky colour, similar to the English form.

*Hepialus sylvanus*. Two specimens, July, 1892, flying at dusk round flower-beds not far from the house.—*H. velleda*. Occasionally seen though not common.

*Zeuzera pyrina*. Two specimens; one adhering to a standard rose-tree, taken by the gardener, July, 1892; the other at light.

*Macrogaster castanea*. One specimen, a female, fell into a boat pushed through reeds on the edge of a small lough near Kilconnell, when going to fish, July, 1891.

*Leucoma salicis*. Not uncommon, but larvæ rather difficult to breed. Took one imago in the daytime, half hidden in a sallow-bush.

*Heterogenea limacodes*. In 1892 I captured two females flying at dusk in August. Two specimens also in June, 1893, flying round flower-beds.

*Dasychira pudibunda*. Several specimens in moth-trap early in May, 1893.

*Pæcilocampa populi*. Not uncommon.

*Bombyx rubi*. Not common; larvæ very abundant on all bogs in 1890. I hardly saw one this year.

*Drepana lacertinaria*. Very common.—*D. falcataria*. Have only taken one imago, though larvæ were found in 1891 and 1892; none emerged, owing probably to the defects in my breeding-cage.

*Dicranura furcula*. As common as *D. vinula*.

*Ptilophora plumigera*. One specimen taken September, 1892, on the staircase window, attracted by the light within.

*Notodonta dictæoides*. Five specimens taken in my moth-trap from May 15th to May 21st, 1893. These were taken only when the moth-

trap was placed on the old Clonbrock Castle, about sixty feet from the ground.—*N. chaonia*. Six insects in my moth-trap in May, placed in position as above.

*Cymatophora or.* One specimen in 1892; date uncertain.

*Bryophila muralis*. One specimen taken flying near sugar, July 20th, 1891.

*Moma orion*. Three specimens taken and some larvæ which I did not succeed in rearing. I saw an imago, on a hemlock-flower, with Mr. Kane, at Mote Park, Co. Roscommon, but failed to take it; July 19th, 1893.

*Acronycta leporina*. Have taken several specimens; all are but slightly marked with black. Not common.—*A. aceris*. One specimen, July, 1891.—*A. megacephala*. Two specimens, July, 1891; one larva on poplar, 1893.

## HOW MOTH-GREASE SPREADS.

By H. GUARD KNAGGS, M.D., F.L.S.

IN the 'Entomologist' for April last (xxvi. 110), Mr. Anderson broached a subject which may, for one thing, have useful results in teaching us to pin our insects on fixed rules. He remarks:—"Now it seems to me that grease does not always emanate from the abdomen, but at times exudes from the thorax, and spreads from the silky hairs clothing the thorax—oftentimes a part of exceeding beauty—and covers the wings, and then it is that grease is indeed a nuisance. I may be displaying my anatomical ignorance here, and it may be that it is impossible for grease to exude from the thorax. All I can say is then that many insects, inter alia, *Demas coryli*, appear to grease in the thorax before any trace of it is seen in the bodies." On p. 149 in the same volume the Rev. Joseph Greene, in reply to Mr. Anderson, says:—"He (Mr. A.) then suggests that grease may emanate from the thorax, and not from the abdomen. I have never heard or read of this theory before, and I cannot think that there is the slightest foundation for it." And then the matter dropped.

Mr. Greene's theory, we know, is that "It (grease) first appears in blotches on the abdomen, and, if neglected, extends to the thorax, corroding the pins, unless black pins be used; thence to the wings, and finally to the paper." Now, so far as my own experience goes, moth-grease *may* first become visible on the thorax *under certain conditions*, while it can never pass direct from the abdomen to the thorax *under ordinary circumstances*, the metaphragm having no opening except for the passage of intestines, vessels, &c., and being, moreover, of a tough, impermeable nature; consequently the abdomen being the great reservoir of the grease, the order of outward and visible signs is generally as follows:—The first appearance is on the abdomen



in one or more places, especially towards the anal end, then it extends to whatever may be in contact with the greasy surface; it may be to the paper of the saddle, box, or cabinet, or to the hind wings if too close to the body; or it may spread along the abdomen, reaching the *surface* of the thorax and insertions of the wings simultaneously, over both of which it may spread, until it arrives at the pin, either at its ingress or egress, when it at once commences business in earnest, and for the first time enters the thorax itself, beginning its work of destruction by corroding the pin (black enamelled pins not being always proof against its attack, owing probably to some defect in the coating, as was recently observed in examples of *Macrogaster arundinis* received from a correspondent in the north); sometimes distending the thorax, by chemical action on the metal of the pin, even to bursting, as in a case of *Sesia scoliiformis* now before me; and lastly, as Mr. Greene observes, it finds its way to the paper which surrounds the pin. Such I believe to be the usual order of events where a greasy specimen, especially if a bred male, of a greasy species, is allowed to take its course without attention.

Grease may, however, behave differently; it may pass from the abdomen to the hind wings, thence to the hinder half of the fore wings. It may be only on one side, as in a case of *N. typhæ* (before me), in which the abdomen, right hind wing, and hinder half of right fore wing are saturated, the paper being stained by the tip of the fore wing, while the thorax and left side are in their normal state. In another case the hairs of the anal tuft alone were greasy, the grease being communicated to the paper; and it is by no means uncommon to find the fore part of the thorax of an insect, otherwise as greasy as can be, untouched. As to the points at which grease may become first visible, I have been credibly informed, by one who ought to know, that the centre of the fore wing is one of them.

This brings us to the conditions under which moth-grease may make its first appearance on the thorax, an occurrence which may possibly be more common than is generally supposed. It may happen when the insect has been transfixed in the posterior part of the thorax, with the point of the pin slanting backwards in such a manner as to pierce the metaphragm and enter the abdominal cavity, in which case a portion of the pin passes through and remains in actual contact with the grease, which it must be recollected is at that time in a very soft state; the insinuating oily matter of the ruptured cells, aided by capillary attraction, finds its way along the periphery of the pin, thus providing an outlet for the exit of the fatty matter as it becomes disintegrated, which is thereby diverted from its usual course,—the barrel is tapped, so to speak,—for it is surprising how steadily the enemy follows the metal, when once it has reached it; and so, as the greasy mass becomes liquefied, it flows

along the passage which has been formed for it instead of permeating the tissues and making its first appearance on the surface of the body. In examples of insects which have been pinned in this manner, when the abdomina are detached, the pin is exposed to view over a considerable portion of its length, and if the specimen be an old one, the green cupric-salt will indicate the position of the pin in its entire transit through the specimen.

It will be interesting to know whether the *Demas coryli*, &c., referred to by Mr. Anderson, have been pinned in the way indicated. It is in those species which have the thorax clothed with long hairs which overlap the abdomen, making it appear to be larger than it really is, and giving a bison-like look to the insect, that the collector is apt to be fogged as to the whereabouts of the centre of the thorax. In such cases, transfix the insect well to the fore; don't give a too backward slant to the pin-point, and always remember, *in medio tutissimus ibis*.

Folkestone, Jan. 7th, 1894.

## REMARKS ON CERTAIN GENERA OF COCCIDÆ.

By W. M. MASKELL.

(Continued from p. 46.)

THE GROUP *Hemicoccidinæ*, Mask.; and the GENERA *Astero-lecanium* and *Planchonia*.

DURING the year 1892 I received from Mr. Olliff, of Sydney, some specimens which, after close examination, I place in the genus *Kermes*; and as this is the first species of that genus which I have had occasion to describe in detail, I venture to repeat here the characters ascribed to the group *Hemicoccidinæ* in my paper of 1883 (N. Z. Trans. vol. xvi.), and in my 'Scale Insects of New Zealand,' 1887:—

Adult females exhibiting the anal cleft and the lobes of *Lecanidæ*: naked or covered.

Larvæ presenting at the extremity of the abdomen the anal tubercles of *Coccidæ*.

From the foregoing characters the group is very evidently intermediate between *Lecanids* and *Coccids*.

When, in the years just mentioned, the formation of this group was proposed, I possessed specimens of three out of the eight species of the genus *Kermes* which forms part of it:—*K. vermilio*, Planchon; *K. bankinii*, Planchon; and *K. galliformis*, Riley. Since then I have received from Mr. Newstead an African species, *K. quercus*, Newst., and now have another from Australia, which I propose to name *K. acaciæ*.

In 1883 I attached to the group the two genera *Astero-*



*lecanium*, Targioni, and *Pollinia*, Targioni; and in 1881 (following Signoret) I had placed *Planchonia*, Sign., amongst the Coccids. Previously, all these three genera had been included amongst a Lecanid section, to which Targioni had given the name "Lecaniodiaspidæ." This name appeared to me to be so singularly inappropriate, seeing that none of the genera placed under it had any Diaspid character and that their larvæ were certainly not Lecanid, that I declined to continue so confusing an arrangement; I placed under the Lecaniodiaspidæ such genera as *Ctenochiton*, *Ceroplastes*, &c., which fitted it, and divided the others according as their characters seemed to direct. One genus—*Lecaniodiaspis*, Targioni—I was obliged to leave alone, knowing nothing about it; nor do I know if anybody has ever since seen it.

The exigencies of my book on 'Scale Insects of New Zealand' in 1887 unfortunately compelled me to extreme brevity. The work was intended primarily for the use of settlers in the colony, and much scientific detail would have been out of place; as it was, the book was scarcely published before I was told "there was too much Latin in it." Some friends of mine who, of late years, have taken up the study of Coccids and who have had occasion to touch upon some of the genera just mentioned, have not given me credit for at least thinking there was some good reason for my action. My papers of 1881 and 1883 have been ignored and my classification set aside, probably because in 1887 it was not reasoned out in detail. The old Lecaniodiaspidæ, including *Planchonia* and *Asterolecanium*, have been made to do duty still. The larval form of *Asterolecanium* has been unnoticed; the anal tubercles present in all stages of *Planchonia* have not been considered; and the confusion introduced by Targioni in 1868 has been perpetuated without discussion of important points. Mr. Ashmead, in his 'Generic Synopsis of Coccidæ,' 1891, adheres to Targioni's system; he is followed by Mr. Cockerell in 'Science Gossip,' 1893; and neither writer pays any attention to the anatomical characters of the insects. "Priority of authorship" has been taken as sufficient; the "rules of nomenclature," said to be binding upon all zoologists, have been made to override common-sense, clearness, and convenience. I must demur to this, and cannot agree to leave in the Lecaniodiaspidæ genera which are not at all Diaspid, nor in all stages Lecanid.

Signoret (Ann. de la Soc. Ent. de France, 1868, p. 282) says of the adult *Asterolecanium miliaris*:—"This species is clearly Lecanid, the anal extremity being cleft, with anal lobes"; and he further remarks that it closely resembles *A. bambusæ* and *A. aureum*. In my paper of 1883 I drew attention to this point, stating very clearly that it prevented me from treating *Asterolecanium* like *Planchonia*, and placing it amongst the Coccids. But



Signoret also states that the larva of *A. aureum* and the larva of *Pollinia costæ* have the anal tubercles of Coccids. Consequently, it seemed to me equally impossible to leave these genera amongst the Lecanids proper. And so, in 1883 and 1887, I grouped *Pollinia* and *Asterolecanium* with *Kermes*.

Professor Targioni has, I believe (though I have not seen his paper), lately in 1893 made further observations on *Asterolecanium aureum*, and concluded that it is really a *Planchonia*. If that is so, it must have the anal tubercles of a Coccid. Possibly it may be found some day that *A. miliaris* and *A. bambusæ* are in like position. As to *A. quercicola*, I have long had doubts about it; and, indeed, whenever anybody has sent me specimens under the name of *Asterolecanium*, I have always found them turn out to be *Planchonia fimbriata*, Fonscolombe. Perhaps, therefore, the whole genus may have to be abandoned some day, and *Pollinia* and *Lecaniodiaspis* may share the same fate. But (and this is the important point for the present) until Signoret's statements quoted above remain uncontradicted, there is a genus in which the larva is Coccid and the adult Lecanid, called *Asterolecanium*, and this must therefore be placed in a group with *Kermes*, intermediate between Lecanids and Coccids. *Planchonia* is altogether Coccid. The two genera must therefore be separated, and under no possible conditions can either of them be placed with the *Lecaniodiaspidæ*. Reasoning such as this I believe to be the only true basis of proper classification.

(To be continued.)

## ON CERTAIN VARIETIES OF *SPILOSOMA LUBRICIPEDA*.

By W. H. TUGWELL.

DURING 1892 and '93 I bred in some numbers from two selected forms of *Spilosoma lubricipeda*, and the following note may be of interest.

*S. lubricipeda*, as we know it in the South of England, is not a particularly striking species, the principal and characteristic markings being an oblique row of more or less clearly defined dots or short streaks, starting from the apical costal margin to the centre of the inner margin on the fore wings, whilst on the hind wings two or three black dots or spots comprise the typical London form.

In 1892 I was at Hailsham in company with Mr. Porritt, who had with him a lot of pupæ of *S. lubricipeda*, the imagines from which were then fast emerging, and from which he was expecting to breed some vars. of the *radiata* of Curtis; but not one of them proved of that type at all, the form shown being quite in another direction, viz., they (that is, a goodly number of

them) developed a more or less defined central fascia in bold outlines, and the oblique row of spots was almost wanting. They were sufficiently striking to induce me to carry on the brood yet another year; so a strongly-marked pair were selected, and the brood from them carefully fed up on *Sambucus nigra*, with the result that during May, 1893, I bred a very long series (several hundred), and the picked examples of that brood are indeed a most striking lot; the fascia-like lines are considerably increased, so that the fascia is clearly and boldly shown on all four wings; and for this most striking type I propose the name of var. *fasciata*. In many of the specimens this fascia line is in the distinct form of the mark of a note of interrogation, and forms a most charming variety. The whole brood was very robust, large in size, and rich in colour, the males being of a deep ochreous-yellow ground colour, the female nearly white. Fully 50 per cent. of this brood came out quite the pale and typical southern form! and from this they ranged up to the grand var. *fasciata*. A very fine female of this form copulated with a male var. *radiata* = *zatima*, and the result of that pairing, now in the pupa state, is anxiously awaited.

In June, 1892, Mr. Harrison, of Barnsley, most kindly sent me a small batch of ova from a pairing of two specimens of var. *radiata*, Curtis = *zatima*; and these larvæ were fed up on elder, at the same time as the former brood referred to as *fasciata*,—of course kept quite distinct. No difference could be discerned between the two broods of larvæ. Possibly the *radiata* form may, on the whole, have been a trifle darker, but any way the darkest *fasciata* a long way overlapped the palest *radiata*: you could not possibly pick them out if by chance they had become mixed.

From these 1892 larvæ I bred twenty-seven examples during April and early May, 1893, all true *radiata*. Two good forms of these were paired, and a large brood reared. During July, August, and September a long series of grand imagines emerged, every one of the *radiata* type; not a single one relapsed into the normal *lubricipeda* form, although a few ran extremely pale; one particularly had the under wing very closely approaching my var. *fasciata*, but it was not quite identical. I should mention that many of this brood still remain as pupæ. That *radiata* is strictly only a form of *lubricipeda*, is to my mind proved by the ready crossing of the two forms, and by the fertility being well kept up in these crossed results. The rule is for hybrids or mules to lose their fertility; that being so, it is very strong evidence that—divergent as the two extremes may be—still they are only forms of one very variable species.

Mr. G. T. Porritt, in his List of Yorkshire Lepidoptera, speaks of York city producing the var. *radiata*; this he has since corrected (Entom. xxvi. 296), and it now appears that the York form differs considerably from true *radiata*. In the former the

black markings on all the wings are much increased both in number and definition, but the oblique spottings are well marked and intensified. This form has a radiated appearance, but is most distinct from the true *zatima*, which has for a long time been found very sparingly on the coast of both York and Lincolnshire. An uncle of Mr. W. H. B. Fletcher took a few examples of *zatima* on the Lincolnshire coast many years since, one of which he sent to Curtis, one he gave to the elder Mr. Dale (the late J. C. D. ?), and one is still in Mr. Fletcher's collection. It was also reported from Driffield, and there is a figure in the 'Entomologist' for 1874.

The locality in England for *radiata* = *zatima* is evidently on the east coast, near the River Humber, Hull and district, Grimsby and district. The probable reason of the occurrence of this form in the districts mentioned is not difficult to assign. The vast number of vessels, fishing-craft, &c., constantly running into these busy ports, on the Humber, afford a most facile transit from the coast of Heligoland. This insect is much attracted by light, and the masthead lights of these many vessels would almost certainly be a great lure to the moths, which being attracted would be sure to rest on some portion of the rigging after their flight. A few hours' run, and they would be safely landed on English soil. Even their own unaided flight would readily effect the same result.

Now, whilst having the most perfect confidence in the *bona fides* of Mr. Harrison, when he states that his one original female was bred by him from London pupa, still I cannot help thinking it far more probable that it was rather one of the Grimsby pupæ that he had at that time: it is so easy to get a little confused, particularly when dealing with a very common species such as *S. lubricipeda*, when naturally no particular pains would be taken, as no such stroke of luck as breeding *radiata* from them was anticipated.

London has never produced this variety, so far as is known; neither, perhaps, is it likely to do so, as *radiata* is not an aberration simply, but rather a strong local form, and in all probability the outcome of very many generations of isolation in Heligoland.

16, Lewisham Road, Greenwich, S.E.

## THE GENUS *PHILOMETRA*, GROTE.

By A. G. BUTLER, Ph. D.

In his recent 'Catalogue of Noctuidæ,' Prof. Smith permits this genus to stand as distinct from *Herminia*; but the *Herminia* of Smith he regards as synonymous with *Chytolita*, Grote.

The male of *Chytolita* has the antennæ ciliated, and with a



prominent knot below the middle. The group which it represents corresponds with Lederer's typical *Zanclognatha*.

On the other hand, Dr. Moore, who worked out the synonymy and fixed the types of genera for his work on the 'Lepidoptera of Ceylon,' gives *H. barbalis*, Clerck, as type of *Herminia*. From the latter, I have been unable to distinguish *Philometra*.\*

Lederer erroneously separated *H. barbalis* from *Herminia*, and made it the type of his genus *Pechipogon* (Hübner). Moore quotes the latter in his synonymy of *Herminia*.

Under *Philometra*, Prof. Smith quotes two species, *P. goasalis* and *P. eumelusalis*. With regard to the first, I have a few remarks to make, which I hope Prof. Smith will accept in the friendly spirit in which they are intended. The following is the species as rendered by Prof. Smith, and he must forgive me for thinking that the synonymy was written down hurriedly.

First of all he calls the species :—

*P. GOASALIS*, Wlk.

1859. Wlk., C. B. Mus., Het. xvi. 134, *Epizeuxis*.

I looked out this reference, and found no trace of Walker's species; but in vol. xix. p. 876, I found *Epizeuxis gaosalis* (sic).

The next reference is :—

1859. Wlk., C. B. Mus., Het. xix. p. 876, *Epizeuxis metonalis*, Wlk.

This also was not on the page indicated; but in vol. xvi. p. 236, I found *Herminia metonalis*, Wlk.

The third reference is :—

Wlk., C. B. Mus., Het. xvi. 236, *Herminia longilabris*, Grt.

But on p. 236, Walker gives no reference to Grote's species.

Now it is perfectly evident that the first reference (Het. xvi. 134) was not required at all; the page quoted merely gives us an enumeration, with diagnoses, of certain species of *Epizeuxis* described by M. Guenée: take away this reference, shift the others up, and all references become correct; excepting that the species is *gaosalis* not *goasalis*, and should be called *metonalis*. The effect of this confusion in the synonymy is, that a mistake has also been made in the note succeeding it, viz.: "Under *goasalis*, Walker has also a specimen of *Herminia petrealis*, Grt., which he did not recognize as distinct."

Now anyone can satisfy himself, by looking up the correct reference to Walker's *Epizeuxis gaosalis*, that only one example ever existed under the name; nor did I find any example which could by any possibility be mistaken for a member of the group in the drawer with it. But, under *Herminia metonalis*, there is a somewhat aberrant example (the type), with an oblique dusky

\* Grote states that the antennæ are shortly pectinate, without nodosity, as one of the characters for *Philometra*, in which he is quite correct.

costal dash on the primaries, which hardly looks like typical *H. gaosalis*, and may be the specimen intended. It is not, however, congeneric with Grote's *H. petrealis*, because its antennæ are shortly pectinated and without nodosity.

Prof. Smith will probably point out that his lines end with a full stop, and therefore that the specific name which follows belongs to the reference on the succeeding line. This may be so, but then what becomes of the first reference following the specific name *P. GOASALIS*, *Wlk.* (sic), and which has nothing whatever to do with the species, inasmuch as the page quoted does not include either of the forms quoted as belonging to *Philometra*.

To my mind the simplest form of reference, and that least likely to lead to mistakes, is that usually adopted in England. This would give Walker's species thus :—

#### HERMINIA METONALIS.

*Herminia metonalis*, Walker, Cat. Het. xiv. p. 236.

*Epizeuxis gaosalis*, Walker, Cat. Het. xix. p. 876.

*Philometra longilabris*, Grote, Tr. Am. Ent. Soc. iv. p. 99.

Nova Scotia and Hudson's Bay. In B. M.

As before stated, I should be much astonished if none of these inaccuracies existed in Prof. Smith's very admirable work; they could hardly be avoided. But, in a later edition of the Catalogue, whenever a further revision is needed, they ought to be corrected. Therefore I feel that they should be at once recorded. No true entomologist is ever impatient of just criticism, but desires before all things to arrive at the exact truth; and, as regards the points adverted to in the present communication, anyone who has a copy of Walker's Catalogue can test their accuracy for himself.

#### NOTES ON MESAPIA PELORIA, HEWITSON, AND ITS ALLIES.

By W. F. KIRBY, F.L.S., F.E.S.,

Assistant in Zool. Dept., British Museum (Nat. Hist.), S. Kensington.

"GREEN-VEINED white" butterflies are very numerous in Central Asia, and in 1853 the late Mr. Hewitson described a curious insect from Chinese Tartary, respecting which he remarked: "This species, except that the nervures are different in their arrangement and the antennæ longer, has more the appearance of a *Parnassius* than of a *Pieris*, and would probably be more naturally placed in that genus. It is at any rate an admirable link by which to connect the two genera. It flies at a great elevation on the mountains of Chinese Tartary."

In 1887 Alpheraki re-described this species from N. E. Thibet, under the name of *Aporia lama*.



Acting on Hewitson's suggestion, Gray, in 1856, established the uncharacterised genus *Mesapia* for *Pieris peloria*, Hew., placing it between *Hypermnestra helios*, Nick., and *Doritis apollina*, Herbst, and this is the position which has generally been assigned to it in our catalogues.

A second species of *Mesapia* (*M. shawii*) has been described by Bates, and subsequently made the type of a new genus, *Baltia*, by Mr. F. Moore, as one of the Pierinæ. The references are as follows:—

Genus *BALTIA*.

Moore, Ann. Nat. Hist. (5), i. p. 228 (1878).

*Baltia shawii*.

*Mesapia shawii*, Bates, Henderson and Hume, Lahore to Yarkand, p. 305 (1873).

*Baltia shawii*, Moore, 2nd Yarkand Exped. Lep. p. 3, t. 1, f. 5 (1879).

I have been able to examine specimens of this insect belonging to Mr. F. Moore; as well as others belonging to the Hope collection at Oxford, through the kindness of Dr. Dixey; and it proves to be a true Pieride, with a superficial resemblance to *Pieris leucodice*, Eversm.; but differs from all the genera allied to *Pieris* and *Aporia* by the very large club to the antennæ, and the short, broad hind wing-cells, which are almost truncated at the end and scarcely angulated. There is only one radial nervule, springing from the subcostal nervule just beyond the end of the cell in the female, and considerably beyond in the male. The claws are bifid, and the wings are fringed. On the fore wings it is very difficult to make out more than four subcostal branches (Moore says there are five); and on the hind wings the cell is broader and shorter than in *Mesapia*, and the lower submedian nervule is indistinct and very short, reaching the hind margin at one-third instead of two-thirds of the distance from the base to the end of the upper submedian, which latter is the arrangement in *Mesapia*. I need not characterise this genus in further detail, as Moore has done so.

Groum-Grschimailo re-describes and figures *Pieris shawii* (Romanoff, Mem, iv. p. 222, t. 10, f. 2 a, b); but his figures differ so much from Dr. Dixey's specimens that they probably represent a distinct but allied species, unless the insect is very variable.

*Synchlœ butleri*, Moore, from Lahoul (P. Z. S. 1882, p. 256, t. 11, f. 6, 6 a), is a second species of *Baltia*.

Oberthür (Études d'Ent. iv. p. 19, pl. ii. fig 1) describes, under the Papilionidæ, a new genus and species from North China, which he calls *Davidina armandii*, and which he places between



*Calinaga* (now recognised as belonging to the Nymphalidæ) and *Parnassius*.

Notwithstanding the extraordinary neururation of this insect, especially on the fore wings, the presence of two submedian nervures on the hind wings, and of a third false one beneath, seem to indicate that its true affinities are probably with *Aporia*, *Mesapia*, and allies. See also Leech (Butt. China, Japan, and Corea, p. 474, pl. xxxiii. fig. 9), who properly places *Davidina* in the Pierinæ, and refers to it as resembling *Mesapia peloria*.

Schatz (Exotische Schmetterlinge, ii. p. 59, 1886) discusses *Mesapia* and *Baltia*, and pronounces both to be probably Pieridæ.

An examination of *M. peloria* proves this to be the case. The claws are bifid, and there are two submedian nervures on the hind wings. Of the described genera *Mesapia* is nearest in neururation to *Aporia* and *Metaporia*; but the density of its scaling and the hairy fringe of the wings will distinguish it from the former; and the long hairs at the base of the wings, the very long club of the antenna, and the peculiarities of neururation detailed in the description, will amply separate it from both.

#### Genus MESAPIA.

Gray, List Lep. Ins. B. M. i. p. 92 (1856).

Palpi long, rather pointed; antennæ long, moderately stout, with a large but gradually formed pyriform club. Body and base of wings clothed with very long slender hairs; fringes with shorter hairs; claws of front tarsi distinctly bifid; wings short, rounded, densely scaled; front wings very broad, subtriangular, costal nervure about two-thirds of the length of the wing, subcostal four-branched, the first branch emitted at about three-fourths of the length of the cell, and running obliquely to the costa, the second emitted at or a little before the end of the cell and slightly arched, the third emitted a little beyond the cell and running to the costa just before the apex, the fourth emitted about half-way between the end of the cell and the apex, and running to the hind margin just below the latter. Disco-cellular nervules oblique, the discoidal and median nervules nearly straight. Hind wings with the upper subcostal nervule emitted at half the distance between the base and the upper disco-cellular nervules; the nervules running to the hind margin straight, and at nearly equal distances apart; a well-marked basal cell; two submedian nervures.

#### Type *Mesapia peloria*.

*Pieris peloria*, Hewitson, Exot. Butt. i.; *Pieris*, t. 2, f. 15, 16 (1853); *Aporia lama*, Alph. Romanoff, Mém. Lep. iii. p. 404 (1887).

Greenish white, with the nervures broadly margined with grey, and grey spots on the nervures on hind margin of the hind

wings. Under side of hind wings yellowish white, tinged with orange, with all the nervures strongly bordered with brown, as is also a fold so strongly marked as to look like an additional submedian nervure below the medial; costal area and basal cell orange.

## NOTES AND OBSERVATIONS.

EARLIER PUBLICATION OF THE 'ENTOMOLOGIST.'—Several of our supporters who are not prepaid subscribers have complained from time to time that they are not able to get their copies of this journal until about the end of the first week in the month. To obviate this difficulty in the future, we have determined to publish on the usual magazine day, *i. e.*, the 25th instead of, as hitherto, the last day of the month. Country booksellers should, therefore, henceforth receive the 'Entomologist' with the other "monthlies." Under this new arrangement, the latest date for Exchange Lists will be the 22nd of each month.

ON THE COCOON OF *EPINEPHELE IANIRA*.—In dealing with another subject I casually referred (*ante*, p. 23) to the cocoon of *Epinephele ianira*, and did so in a way no doubt to suggest that *ianira* always made a cocoon. This is of course not the case. *E. ianira* makes a cocoon very rarely; it often, however, does some spinning that is in its essential nature a cocoon, and rarely perhaps fails to do a little more than make merely such a pad as *Vanessa urticae* or *A. paphia* does. My casual reference, therefore, if taken *au pied de la lettre*, requires modification and apology, the latter more especially, as after I had written it I let it go, thinking, somewhat maliciously perhaps, it might in some degree awaken some of those to whom the fact was new, little suspecting that my friend Mr. Frohawk was of the number (*ante*, p. 66). As a matter of fact, my really careless allusion, made and intended to be taken rather loosely, is more correct than Mr. Frohawk's point-blank assertion to the contrary. This species is indeed in this matter most interesting. Certain *Satyrinae*—*Satyrus semele* for example—have lost the power of hanging themselves by the tail, and make something that is perhaps fully entitled to be called a cocoon. *E. ianira* has made some advance in this direction. The power of suspension is so far dwindling that, the cremaster being badly provided with hooks, the larval skin is retained to assist the suspension. It also very usually pulls together several grass stems or other adjacent objects, and ties them together with silken cables, so as to form a tent around the stem selected for suspension. It is rare to find none, or so few as one such cable. Such a structure is no doubt, as I have said, in its essential nature a cocoon. On one occasion, and when I was inclined to restrict the name cocoon to some such structure as is made by *Saturnia carpini* or *Arctia caia*, I met with an instance of *E. ianira* making what I felt obliged to call a cocoon. In the autumn of 1886 the late Mr. Hellins, who was working up the butterfly material required to complete the histories left imperfect in the volume of Buckler's 'Larvæ,' sent me larvæ of *E. ianira*. It would appear that I forced some of these, and on Jan. 20th, 1887, I wrote him;—"I have



to tell you that *E. ianira* spins a cocoon, perhaps hardly so good a one as *sambucaria*, and therefore perhaps you will deny it the name. I gave him no chips, no sawdust, sand or anything to go into; but he goes to the bottom of the tumbler amongst a lot of short grass, and ties various portions together and to the glass with cables, so, magnified" (sketch), "and these are numerous enough to justify (the name) cocoon being applied to the structure. He has settled down about the middle of the upper slope, and is nearly ready to change—I cannot put in the rest of grass and cables" (sketch). On Jan. 22nd I sent glass, &c., to Mr. Hellins. On the 27th he writes:—"Thanks to your packing, tumbler and pupa have come safely. I haven't examined the latter thoroughly yet, but sufficiently to see several little cables of silk, with elaborate fastening to the glass, and the grass blades are plainly held together. I daresay I have a dozen little larvæ. I hope some of them will show similar cunning." On Feb. 8th:—" *E. ianira* came out yesterday." He made no further report on the cocoon. Unfortunately, at this time his letters tell me of much suffering from toothache, neuralgia, &c., which terminated so soon after in his lamented loss. On April 28th I wrote to him:—"My four *ianira* (some, I suppose, I did not force) are now three in pupa and one hung up. Each has thrown out a cable or two, one several, and one has tied some grass together; but in no case has anything been made that could be called a cocoon, as might fairly be done with the one I sent you. The intention is, I think, of the same nature as a cocoon, in the case of the one that has drawn together some grass, namely, hiding and protection, something more than merely steadying the stem to which pupa is affixed. Curiously enough, all of them have suspended themselves to the glass; in each case stiffly by medium of cast skin, and at an angle and not mere suspension" (sketch showing angle to be about 50°). I need not say none of these letters were written with any view to publication. I have made no observations since that do not confirm these, and the only change I should now make in describing them would be in the direction of regarding all these instances of cables, drawing grass together, &c., as having to be described as cocoons.—T. A. CHAPMAN; Firbank, Hereford, February, 1894.

THE BURNEY COLLECTION (HETEROCERA, continued from p. 69).—A fine series of fifteen *Cleora angularia* (= *viduaria*) was broken up into three lots of four examples in each, and two of these were purchased at £2 17s. 6d. per lot; the other lot went for £3 3s.; and three specimens, together with six of *C. glabraria*, fetched 35/-. The two lots of *Acidalia*, in each of which a specimen of *A. perochraria* was included, sold for 12/- per lot; and two others, each containing an example of *A. herbariata*, found purchasers at 15/- to 20/-. The latter, however, included a specimen of *A. osseata*. Two specimens of the last-named species, seven of *A. circellata*, and others, realised 37/6; and other lots, in which half-a-dozen *A. circellata* formed part, sold for £2 and £1 17s. 6d. A scratch-lot, in which were one *A. herbariata*, nine *A. manciunata*, nice banded forms of *A. marginepuncta*, &c., only made 10/-; and for a nice useful assortment of some fifty-four *Acidalia* including "one *strigaria* taken by Mr. Button near Gravesend, 1870," the bidding would not advance beyond 5/-. In the case of some lots,



containing such insects as *Lythria purpuraria*, *Sterrrha sacraria*, among others, it was not apparent whether the bidding was influenced by a desire to possess the "plums" in the lot, or only the commoner things therein, e. g., lot 247, "*carbonaria* (6), *conspicuata* (5), *euphorbiata* (7), *purpuraria* (2), *sacraria* (2, one taken by Mr. Rogers at Plymouth, 1858, and one from Mr. Hellens, of Exeter, bred in 1867), and others," 13/-. Lot 249, "*pinetaria* (4), *conspicuata* (5), *euphorbiata* (7), *sacraria* (2, one taken by Mr. Bouchard at Sutton, Surrey, Aug. 1864, and one from Mr. J. B. Hodgkinson, taken in Lancashire, 1864)," 20/-. Lot 250, "*pinetaria* (6), *euphorbiata* (4), *purpuraria* (3), taken by D. T. Button, Gravesend, in 1867," 9/-. It would appear, however, from these prices that *purpuraria* was not greatly in demand. Four specimens of *Aplasta ononaria*, "taken by Mr. Piffard in the Warren, Folkestone, July, 1866," were disposed of at 6/- and 14/- a couple. Six *Eupithecia consignata* and forty-eight others sold for 12/-; another lot of "pugs," including four *stevensata*, went for 9/-; but the next lot, which contained eleven *consignata* as well as four *stevensata*, found a purchaser at 27/6; and two other lots, in each of which there were five examples of *stevensata*, were knocked down at 45/- and 26/-. Two lots of *Eupithecia*, among which were several good species, including eight specimens of *extensaria* in each lot, went for 18/- and 24/-. Lot 274, comprising three examples of an undetermined species of *Eupithecia* and three *innotata*, sold for 37/6. *Phibalapteryx polygrammata*, of which there were twenty specimens, were disposed of in lots of four, at from 35/- to 55/- per lot; the total sum realised for the series was £10 15s., and this gives an average of 10/9 per specimen. One hundred and ninety-four specimens of *Pyralidina*, including six *Diasemia literalis*, were disposed of for 10/-; and another lot of one hundred and twenty-six specimens, including nine *D. literalis* and eleven *Nascia ciliialis*, went for 15/-. *D. ramburialis*, of which there were four specimens, sold at 10/6 a brace; and a pair of *Botys lupulinalis* produced 10/-. Another example of the last named went with a lot of other nice species for 7/-; and a fourth example, together with a hundred and one specimens of other species, sold for 15/-. Two specimens of *Antigastra catalaunalis* did not run up the price much of the respective lots in which they were included, as one with sixty-two other decent "Pyrales" went for 8/-; and the other, attended by seventy-two nice things, fetched 9/-. The same remark applies to *Margarodes unionalis*, of which there were four examples. *Botys repandalis*, discovered and bred in this country by Mr. Burney, realised from 20/- to 26/- each; there were only seven specimens in the series.—R. S.

VANESSA ATALANTA AND V. CARDUI.—With reference to Mr. Arkle's note (Entom. xxvi. 356) on *V. atalanta* in Florida, I may mention that I found this species fairly plentiful in 1887 at Charleston, S. Carolina, where the larva fed on *Lamium* (dead-nettle), which grows in marshy places. The perfect insect is somewhat smaller than the British, but when placed side by side no difference in colouring can be observed. I also found *V. cardui* at the same place, and since I have been in South Africa have met with it everywhere; it simply swarms at Johannesburg, but is somewhat smaller than the British insect, one specimen which I bred measuring  $1\frac{5}{16}$  inch in expanse of wings. In the absence of its

usual food-plants it feeds on a species of everlasting, which also serves as a food-plant for a cannibal Noctua. In collecting larvæ of *V. cardui*, I casually placed one of these larvæ in the breeding-cage, and in the course of two or three days was astonished at finding the latter had eaten nearly all of its companions.—JAS. P. CREGOE; Johannesburg, Jan. 5th, 1894.

SECOND BROODS IN 1893.—Seeing that several correspondents are recording unusual second broods in 1893, I append a list of those that have come under my notice. *Agrotis segetum* was common everywhere during Aug., Sept., and Oct. *A. exclamatoris*, some half dozen in Suffolk during late Aug. and early Sept.; and again at Winchmore Hill on Sept. 28th and Oct. 14th, the last being perfectly fresh. A freshly-emerged female *Pieris rapæ* and its empty case were found on a fence at Crouch End on Oct. 14th, and on the same evening a specimen of *Boarmia rhomboidaria* at light, the latter a male, small, but otherwise good. At treacle at Winchmore Hill the following turned up:—*Leucania pallens* (Sept. 25th), *L. comma* (Sept. 25th, 28th, and Oct. 14th), *Triphæna orbona* (Sept. 25th, 26th, 28th, and Oct. 7th), *Caradrina morpheus* (Sept. 28th), *C. cubicularis* (Oct. 14th), *Agrotis puta* (Oct. 14th), *Xylophasia polyodon* (Oct. 18th). Besides the above, a second brood of *Acidalia incanaria* was noticed in plenty on the fences here on and about Sept. 10th.—RUSSELL E. JAMES; Chesterville, Hornsey Lane, Jan. 22nd, 1894.

## CAPTURES AND FIELD REPORTS.

THE MILD SEASON.—I found to-day, in a breeding-cage which has stood since October in a cellar where no fire is ever made, a freshly emerged *Dasychira pudibunda* (alive) and *Cucullia verbasci* (dead), in splendid condition. I have never had any Lepidoptera emerge before in January, although kept in the same place.—A. JACOBY; 7, Hemstall Rd., Jan. 31st.

Mr. Butler enquires (*ante*, p. 71) if Jan. 21st is not a very early date for *Hybernia leucophaæaria*. Under ordinary circumstances doubtless it is so; but in this abnormally warm winter it is only natural that such species should emerge at an unusually early date. So I notice that Miss Maude Alderson records this species as being well out on Jan. 17th at Worksop (*loc. cit.*). Even in Scotland it was out at a still earlier date (Jan. 12th), when I took a single specimen at rest. This was rather remarkable, as coming so soon after the three days of intense frost which we experienced from Jan. 6th to 8th, when the thermometer readings for the three successive nights were respectively 5° above zero, 2° below zero, and 2° above zero. But the frost departed as suddenly as it had come, and was succeeded by very mild weather. Last year I took *H. leucophaæaria* on Feb. 5th. Mr. Freir (*l. c.*) records the capture of *Phigalia pædaria* (*pilosaria*), as an "early occurrence," on Jan 20th. I took a specimen here (Scotland) on the 21st, and last year took one on Feb. 3rd, also in Scotland. On Jan. 22nd, a frosty night with brilliant moon, the whitethorn hedges here were full of *H. rupicaprararia*, which was then out in profusion; last year I took it here on Feb. 1st. Very probably the species I record were out even earlier than the dates I give, as I did not search for them, and only



came across those I found incidentally.—J. A. MACKONCHIE (Rev.); The Hirsels, Feb. 9th, 1894.

The following notes are from North Derbyshire, 150 miles north of London, at 500 to 600 feet elevation:—*Hybernia rupicaprararia* seen Jan. 16th; *H. progemmaria* taken Feb. 5th; *Phigalia pilosaria* taken Feb. 6th; larva of *Phlogophora meticulosa* taken Oct. last, spun up same month, and emerged to-day (Feb. 7th),—K. H. FULLER; Bakewell.

I saw a male *Hybernia leucophæaria* at rest on Jan 27th, on an oak-trunk in the woods bordering the drive to Eaton Hall. Weather very mild since Dec. 3rd, excepting a week of severe frost ending Jan 8th. I took a fine male *Phigalia pedaria* (*pilosaria*) off a Chester gas-lamp (Curzon Park), on Dec. 29th, 1893; and the species was common on the lamps on Jan. 25th, 1894.—J. ARKLE; Chester, Feb. 2nd, 1894.

Last evening I captured an example of *Phlogophora meticulosa*. The specimen, which is in good condition, was in a cool conservatory—temperature about 53°. Does this moth ever hibernate?—F. W. FREIR; Elm House, Walthamstow, Jan. 23rd, 1894.

Yesterday I had a specimen of *Macroglossa stellatarum* brought to me, which was captured while flying about a room in a house at Portslade. The insect is in fairly good condition, notwithstanding its imprisonment in a match-box.—T. WILSON; Hangleton Hall, Sussex, Feb. 9th, 1894.

On the evening of the 2nd inst. a friend and myself had an evening with the lantern in Epping Forest. The weather was rough, raining at times, and very mild. Searching the boughs and trunks of whitethorn and oak trees produced several *Phigalia pedaria*, and then we thoroughly examined an oak-fence with excellent results. *P. pedaria*, both male and female, were taken to the number of eighteen; they were chiefly settled on the top edges of the palings, fluttering their wings, and were easily boxed. We also captured *Scopelosoma satellitia* (one), *Hybernia progemmaria*, *H. defoliaria*, *H. leucophæaria*, *H. rupicaprararia*, and eight chestnuts (*Cerastis vaccinii*). Altogether our captures were about forty insects, and the genus *Hybernia* simply swarmed.—F. W. FREIR; Feb. 16th, 1894.

As another instance of early awakening from hibernation, I may mention that Mr. W. J. Lucas has just sent me a living specimen of *Pterophorus monodactylus* (= *pterodactylus*), which he took on the palings in Richmond Park, on the 19th inst.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, Feb. 21st, 1897.

SUGARING IN JANUARY.—Tempted by the unusually mild weather, and never having tried sugar in January before, I got my tin and brush out of their winter hiding-place on the evening of the 11th inst., and went a "round." The result was a "bag" of twelve moths—nine *Scopelosoma satellitia* (some in very good condition), one *Cerastis vaccinii*, one *C. spadicæ*, and one *Pterophorus monodactylus*. I also saw a small moth, which I believe to have been a *Tortrix*, on the wing, but had no net with me. It is perhaps worth mentioning that, having no rum, I put a few drops of "white rose" perfume into the sugar. I have often thought of trying this before, and I shall certainly try it again in the summer.—S. G. REID (Capt.); Froyle House, Alton, Jan. 20th, 1894.

LARVÆ OF *PIERIS BRASSICÆ* IN NOVEMBER.—On Sept. 23rd I found on cabbages a number of larvæ of *Pieris brassicæ*, which I placed in a breeding-cage. To save the cabbages I watched the bed daily, and up to Nov. 30th, when I left the country, I seldom missed finding some larvæ. The



numbers were so great that I was obliged to destroy many of them; some hundreds changed into pupæ, which I have kept. The mildness of the autumn may have caused them to appear at such an unusual time, and may be worthy of record.—G. B. ROUTLEDGE; Tarn Lodge, Wetheral, Carlisle, Dec. 1st, 1893. [Larvæ of this species were recorded as "swarming" at Dovercourt on Oct. 10th, 1892; *vide* Entom. xxv. 287.—ED.]

A DAY IN MONKSWOOD.—On July 6th, 1893, memorable in the hearts and minds of English people by the marriage of the Duke of York and Princess May of Teck, and by being the hottest day known for many years, I made a trip to that Eldorado of entomologists, Monkswood—Monkswood of *pruni* renown—in Huntingdonshire. I can almost hear many of my fellow insect-lovers exclaim, "Yes; I have often heard and read of Monkswood, but how do you get there?" The nearest station to that noted place is Abbot's Repton, a small siding, the first after passing Huntingdon. The wood itself is situated about two miles from the station; the way there is along a very pleasant winding road, with wide stretches of grass, rushes, and waste ground on each side. Immediately on leaving the station, and before I had time to fix up my net, I saw and afterwards captured a fine male *Argynnis adippe*. After journeying a short distance a passing cart gave me a friendly lift; my guide was of a very talkative disposition, and informed me that "a few years ago we used to see a lot of you gents with nets about, but they seem to have left off coming lately." On the way I noticed several *Argynnis*, *Melanargia galatea*, and other species. Arriving at the top of the hill I alighted, and, having bid my friend farewell, descended a sharp decline, and then, turning to a gate on my left, I was astonished to see *Melanargia galatea* rise before me in crowds—nay, as Newman says in his fine work on 'British Butterflies,' "in profusion." I only once before remember seeing a similar sight, and that was at Gulliford's Tree, near Dorchester, Dorset, a few years since. *Epinephele tithonus*, *E. hyperanthus*, *Hesperia sylvanus*, *H. linea*, *Chrysophanus phlaeas*, *Lycæna icarus*, and other common species, were in abundance. Having captured a good series of those I required, I entered the wood. *Macroglossa stellatarum* flew rapidly by me. Here I may mention the flies came around my head in millions; having, however, a dislike to tobacco smoke, they soon bid me adieu. Many more Sphinges dashed past me, but I was unable to make a capture. Then, with its well-known aristocratic flight, *Argynnis paphia* appeared in view—that bright red patch of colour that seems to have been designed by Nature to enrich the cool grey woody shadows; and having succeeded in netting the specimen, I met an aged woodman. "Ah! yes," he exclaimed, "we calls 'em 'sogers' in these parts; if you go up the drive and turns to your left, there be lots of 'em." I went up that drive and turned to my left, and sure enough there were "lots of 'em." Arriving at the top of the wood, after a very hot, close walk, I was delighted to get *Argynnis aglaia*, a female, in grand condition; and soon *A. adippe* fell to my net. I afterwards found both kinds plentiful and in fine condition, but difficult to obtain. Later on I took some good *Pararge egeria*. Whilst quietly lunching in the shade I espied a female *Apatura iris* flying grandly round an adjacent oak tree; the bushes grew high and thick here, therefore I failed to get within reach of her. By this time my boxes were closely packed, so I bade Monkswood farewell. On my way back I netted many *E. hyperanthus*; but nothing in the form of a good variety could be found, and only one bleached specimen of *E. ianira*, a male.

I also captured one more *A. adippe*, and one *A. aglaia*, after an exciting chase. While waiting for the train I again saw *Macroglossa stellatarum*.—ALFRED H. BLAKE; High St., Biggleswade, Beds., Dec. 12th, 1893.

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### OBITUARY.

MAJOR-GENERAL GEORGE CARDEN died, after a few days' illness, from the effects of influenza, at Douglas Towers, Bromley, Kent, on Monday, February 12th, aged fifty-six. He entered the army in 1854 as an Ensign in the 77th Foot, and served with his regiment in the Crimean War. He subsequently served with the 5th Foot (now known as the "Northumberland Fusiliers") during the Indian Mutiny Campaign, and was Lieutenant-Colonel commanding that regiment for some years. Colonel Carden (who was granted a year's service for Lucknow, and was in receipt of a Distinguished Service Pension) retired on half-pay in 1882, and received the rank of Major-General in 1887. On retiring from the army he took up his residence at Surbiton, and remained there until he left for Bromley in 1892. He joined the Entomological Society of London in 1890. General Carden made no pretensions to be a scientific entomologist, but he was a close observer and an ardent collector of Lepidoptera; and his small collection consisted exclusively of insects obtained by himself in the woods and fields, or bred from larvæ which he had collected. During the past six years the writer of this notice made many pleasant excursions with the late George Carden in the New Forest, and Tilgate Forest; in Barnwell Wold, the Bedford Purlieus, Castor Hanglands, and other woods in Northamptonshire; and in many woods and on many hill-sides and commons in Kent, Sussex, and Surrey. In July and August, 1891, the deceased spent his annual holiday of six or seven weeks in South Devon, and obtained a long series of *Callimorpha hera*, several of which were generously presented to the writer. General Carden was a good musician, both theoretically and practically; and his voice, a light tenor of pleasant quality, will be missed in local musical societies, and also in certain "Choirs and places where they sing." He was also an accomplished artist, and lost no opportunity, when away on his entomological excursions, of sketching and painting the most picturesque scenes amongst which his rambles led him. As a man of business he did good service, from the time of his retirement from the army up to the date of his death, as Secretary of the Rochester Diocesan Society, and he will be much missed in Parliament Street. Although apparently a shy, cold, and reserved man amongst strangers, intimate acquaintance proved him to be a kind-hearted and genial companion, especially in the smoking-room; and his premature death makes a gap in a wide circle of friends which will not easily be filled up. The deceased leaves a widow and nine children.—(H. G.)

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ERRATA.—P. 36, line 4, for "*Melitæa*" read "*Melanargia*." P. 62, line 2 from bottom, for "account for those" read "account for *in* those."



# THE ENTOMOLOGIST

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## THE GENERA OF LIMNAINE RHOPALOCERA ALLIED TO *CADUGA*, AND DESCRIPTION OF A NEW SPECIES.

By J. JENNER WEIR, F.L.S., F.E.S., &c.

THE genus *Caduga*, Moore, with the three genera *Mangalisa*, Moore (type *albata*, Link. Som.), *Budacara*, Moore (type, *nil-giriensis*, Moore), *Chittara*, Moore (type *fumata*, Butler), form a very natural group, differing mainly from the allied genus *Parantica*, Moore, by their more robust structure and greater substance of the wing; in the latter genus the wings have a much more flimsy character, and all the species a far more slender appearance.

The genus *Caduga* itself may be divided into two sections: the first has the characteristic white markings broad and hyaline, being but little interrupted by basal lines, excepting somewhat in *C. pseudomelaneus*; this section consists of *C. tytia*, Gray, and the closely allied topomorphic races, *C. nipponica*, Moore, and *C. loochooana*, Moore, *C. tytioides*, De Nic., *C. melaneus*, Cramer, and its topomorphic race *C. swinhoei*, Moore, and the rare but perfectly distinct *C. pseudomelaneus*; the other section is characterised by having all the white markings much reduced in breadth, scarcely hyaline, with the white in the discoidal cells of both wings and the lower basal markings of the fore wings much broken up by lines proceeding from the base, and dividing each marking into two or more: this section consists of *C. larissa*, Felder, of Java; *C. banksii*, Moore, of Malacca and Sumatra; *C. luzonensis*, Felder, of the Philippines; *C. funeralis*, Butler, which I place here with doubt, from Nias; and, lastly, *C. crowleyi*, from Kina Balu, North Borneo, the subject of this paper.

### CADUGA CROWLEYI, n. s.

This fine species, as will be seen by the figure, is nearly allied to *C. larissa* and *C. banksii*; it differs from either of those in  
ENTOM.—APRIL, 1894.



form by the more triangular shape of the fore wing, which is also much broader and more rounded at the apex; the subhyaline mark in the cell is reduced to a slender streak of white, with a just visible second streak above, quite obsolete towards the base; the lower basal markings are more completely divided than in either of its allies.



*Caduga crowleyi*, n. s.

The lower wing has the streak of white in the cell very long and narrow, with a much narrower white line above it, and between the two there is—towards the distal end of the cell—a third just visible streak; below are four basal streaks; there are three spots above and four below the cell on the disk; beyond is a double row of submarginal white spots, which are better defined than in any other species of the genus. The fore wings have an expanse of 100 mm., thus exceeding in length most specimens of either *C. tytia* or *C. melaneus*, but falling short of the dimensions often reached by those two species.

Hab. Kina Balu, North Borneo.

I am indebted to Mr. P. Crowley for this valuable addition to my collection of Limnainæ.

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## THE NEW ENTOMOLOGY.

By W. E. SHARP.

(Concluded from p. 88.)

THE distribution of insect life, again, is a subject to which attention has been paid only recently. Here we get into touch with Geology and Palæontology; we explain, to our own satis-

faction at any rate, the occurrence of mountain and lowland forms. We have our theories of waves of migration, of older and newer arrivals. When we discover *Dytiscus lapponicus* in a highland loch, and *Pachnobia hyperborea* on a highland mountain, we are not simply content with those facts, we must enquire more curiously; we appeal to the Geologist to interpret our phenomena, and the Geologist—on the strictest lines of inductive reasoning—tells us of long past ages of ice, when glaciers slid down the sides of our highland mountain and scooped out the bed of our highland tarn: the Palæontologist takes up the tale, and speaks of fauna and flora specialized to such Arctic conditions. Thus we get hold of the idea of vast secular changes of climate, and of plants and insects gradually changing with changing conditions of temperature and environment; of our Alpine forms being, as it were, the stranded relics of an older world; and Entomology takes its place among the other sciences to tell us of the ever-changing procession of life which has been marching across this planet since vitality first began upon its surface.

Another development of modern Entomology, although this is to a great extent the work of the future, is some investigation into that difficult problem of the irregular abundance and scarcity of many forms of insect life. That there are factors at work all through Nature of which we know little or nothing, influences which guide the ebb and flow of being, we are perhaps only now beginning to learn. To me this field appears to be one of the most interesting and one of the most fruitful that can engage the attention of the modern entomologist, but I foresee that it must be approached by the most strictly scientific methods. I believe that there are subtle correlations and delicate adjustments between various forms, and between form and environment, that elude our most patient research; and perhaps I may be allowed in this connection to depart for a moment from my retrospective attitude, and to impress upon my readers the incalculable value, in this matter, of careful systematic records kept by a competent body of observers during a long period of time. I venture to believe that this subject has an economic bearing and importance little suspected, while its true solution would throw light on some of the most mysterious phenomena of Biology.

That, however, is one of the tasks of the future, and I am now discussing more the present position of Entomology. Let us, then, consider for a moment one comparatively modern department of the study from a biological point of view. I have already alluded to the support which many post-Darwinian evolutionists have been able to derive from a study of the order Insecta. I need only mention *mimicry*, as it is called, to instance one case. We all know what is meant by mimicry, and how its



practice was first discovered actively at work in the economy of Nature among certain groups of Lepidoptera in South America. Since then, however, we have included mimicry in a wider term, and call it only one form of assimilative coloration. Now it is quite certain that in the realms of Entomology we meet with by far the most striking instances of protective resemblance, both in colour and form. Formerly this principle was supposed to be generally tropical in its manifestations, and it was thought sufficient to cite as instances the Heliconid imitative Pieridæ of Brazil or the stick-like Mantidæ of India. Now we know that this specialization of colour and form pervades all Nature, and is as common, although not so theatrical in its developments, in Europe as under the Equator. We, moreover, distinguish between its manifestations; there is the defensive and the aggressive kind; there is the simply passively protective, as in the case of Geometrid larvæ or the majority of our British Rhyncophorous Coleoptera; or actively defensive and minatory, as the wasp beetle, or the larva of *Chærocampa elpenor*. Of this protective kind of resemblance there is a perfect cloud of witnesses among insects. Protection by colour for aggressive purposes or concealment for attack seems less frequent; but there are many instances of it, both in its concealing and alluring phases, among the Arachnida. Some assimilative coloration also serves a double purpose, as in many of the Hydradeephaga (the water beetles), and conceals the insect as well from the perch, its enemy, as from the smaller beetle, its prey.

This is a very wide and a deeply interesting line of research; and I have dwelt upon it for a moment, familiar as it is to all of us, because it exhibits examples not only of some of the best evidence supplied by Entomology in support of evolution, but also of some of the most serious difficulties that theory has had to contend against. For it must by no means be assumed that because the evolutionary theory of life has found a general acceptance among all modern scientific thinkers, that therefore it can solve all problems that Biology can offer to it. The courses of most great theories have similar features. A great mind evolves and enunciates some luminous generalization; it explains so much that the vast illogical, inaccurate, public fancies that it explains all, and it meets with a triumphant acceptance. Then the wise men, generally German professors, turn and seek to rend it, dissect its premises, prove it with hard questions, follow its deductions to their remotest conclusions, and find perhaps that some of its assumptions are too hasty, some of its supporting evidence feeble or irrelevant, and the real battle begins. Sometimes the great theory falls incontinently to pieces, like that of the Aryan race and their Asiatic home; far more rarely, like that of the Copernican system of the heavens, it emerges triumphant from every ordeal, and becomes thenceforth axiomatic.



Thus has the evolutionary idea of life been assailed, and more especially with Entomological arms. For instance, although we may cite mimicry as a most cogent evidence of modification of form or colour by the pressure of the environment, and indeed believe that there can be no other tenable theory to explain its manifestation; yet when we come to consider the method of change, step by step, we feel almost crushed by a sense of the impossibility of a rational explanation of the *modus operandi*. A *Pieris* could only obtain protection by its resemblance to a *Heliconia* when that resemblance had become approximately perfected; but what started the development along that particular line, and what carried it on? We must necessarily believe the change to have been very gradual, a few scales at a time, and in many generations. How was it then, if the species needed that protection for its very existence, that it was not exterminated before it had time to arrive at that pitch of resemblance which alone could afford the necessary protection? You perceive the difficulty, and this is only one of a thousand which the entomologist can ask.

Thus most of my readers will be aware that the pages of one of the "serious" reviews have lately been the arena for an encounter of the greatest interest and moment between two of the most eminent of living Biologists. I refer to Mr. Herbert Spencer and Professor Weismann. Their weapons are taken almost exclusively from the entomological armoury; and the Sphinx-like riddle on which the Englishman attempts to impale his adversary is something like this.

If, as you contend, all specialized forms are the result of the pressure of the environment acting through heredity, and further, if acquired variations are not transmitted, how do you explain the very specialized forms of worker ants and bees? For not only is each species clearly differentiated from the rest, but these workers, so differentiated, are themselves structurally distinct from the males and fertile females of the same species. Yet the workers or neuters, being sterile, cannot transmit beneficial variation, and the environment which justifies such variation in the workers has no application to the males and perfect females which do transmit.

The difficulty is not a new one, but the question is one of the many which are much easier to ask than to answer. How the German Professor replies, and how his opponent rejoins, and what are the arguments they employ, with these I will not further weary you, for whoso will may read them in the pages of the 'Contemporary.' I have indeed only referred to all this to demonstrate how Entomology is not now merely the innocent hobby of a few mild enthusiasts, but has become the necessary equipment of the modern scientific Biologist.

Perhaps I ought to add, as a further department of the new

Entomology, that economic form of it which is so conspicuous in America, and is yearly attaining larger proportions with us. My view of the case, however, is that this is no part of the scientific extension of Entomology. The study of chemical manures and soil constituents is no part of Chemistry; it belongs to the modern method of Agriculture. And what we call economic Entomology is also really a department of Agriculture, and would not be worth the trouble of studying except for the sake of agriculture. This I do not say in any sense of depreciation of the labours of the many workers in that field—workers who have done, and are doing, most excellent and valuable work. The application and diffusion of special knowledge gained by special research is one thing, and a very necessary one; but the attainment of ultimate truth is quite another, and this only can worthily be called Science.

You observe how I harp on that word *Science*, for my endeavour to-night has been to indicate in some slight way the *scientific* side of our favourite study; how we take part in the general progress of knowledge, and have our share in the great physical controversies of the failing century. I have sometimes heard it asserted that Nature has lost half her charm since we have taken to subjecting her to the methods of exact investigation, materialised and dead are the epithets descriptive of her condition, the glamour faded, the enchantment broken. My mind on the subject is different; I think, even in the study of insects, we find an added fascination and a deeper meaning as we look at them in the light of modern research; we have that sense of something far more deeply interfused, that idea of the mystery which underlies all phenomena, the reality behind the mere transient and apparent when we transcend the method and begin to enquire about the cause,—a mystery and a reality which to the simpler vision of our predecessors was undiscernible.

For we ourselves are heirs of all the ages, and our sciences after a certain point become mutually interdependent and correlatives of one another. To know one part of Nature thoroughly the student must be conversant to some extent with all her manifestations. He who would be a specialist in Entomology must seek the help, if not share the labours, of the botanist, the geologist, the palæontologist, even of the physicist and the chemist. Who is sufficient for these things? you may well ask; and consequently, although many may be called to be entomologists, few are chosen to interpret the secrets of insect Biology. For there are now, as ever, entomologists of all kinds, and, even ignoring the schoolboy and "young collector" stage, many call themselves entomologists whose only claim to the title is a zeal for acquisition which they share with the bibliomaniac and the philatelist. A collector of insects need not necessarily be an entomologist, although the terms seem too commonly held as synonymous. To pursue this



line of thought much further might lead us to a consideration of that commercial kind of Entomology which is certainly a new departure, and not always a pleasing one.

I must, however, restrict myself to my original argument, and my belief is that as Entomology has enlarged her borders, annexed new fields of speculation, and discovered possibilities previously unthought of, so her votaries have become more serious; and if, on the one hand, we may discern a tendency for the study—at any rate of the Lepidoptera—to become fashionable, and perhaps superficially popular, on the other we have as adherents men eminent in biological science, men whose names are familiar to you all, whose work and whose influence are alone sufficient to redeem Entomology from the charge of triviality or lack of adequate intellectual interest.

So much for the *present* position of the study. And the future? Well, as I said before, the time is past when the work of the future was supposed to be simply the description and enumeration and systematic arrangement of all the species of the Order Insecta now extant on this earth; we have other ideals. In a book which has lately attracted much attention, which attempts a forecast of the goal whither our present social and intellectual tendencies are urging us, the author indicates his belief that the future of natural science is towards specialism. The possibilities of great revolutionary theories will soon be exhausted; they must be attacked and defended in detail; the sciences are yearly becoming more comprehensive and more profound, and individual work, this author believes, must necessarily become more departmental and circumscribed. And I think you will consider the forecast a just one; the tendency undoubtedly is towards detail and subdivision. The autocrat's "scribe" was a prototype. First we had Naturalists, Ray and Linnæus; then came Entomologists, and we still call ourselves by that name, although there are really hardly any Entomologists now extant. We are Lepidopterists, Coleopterists, Hemipterists, and the like. Already we may notice a tendency to further subdivision, and probably the next century may know us as "Aphodiists," "Vanessidists," or the exhaustive investigators and recorders of some extremely limited local insect fauna. I fancy, too, that our studies may become more interesting as they take a lateral rather than a vertical extension; for instance, that as facilities for exchange and intercommunication become enlarged, it will be preferable to collect and study, say, the Elateridæ or the Theclæ of the world rather than the Coleoptera or Lepidoptera of Great Britain. Specialists *in petto*, to have mastered a small part thoroughly, that will perhaps be the laudable ambition of the entomologist of the future, and to the vast edifice of the sum of human knowledge we shall be content if we have added but one single and inconspicuous stone.



And this brings us to our final standpoint. In my inability to pursue the more accustomed path of the annual addresses, and review for you the notabilia of the entomological year, I fear I have been betrayed into an erratic course among vain retrospections and useless speculations. It is, however, profitable sometimes to stand back as it were, and view a matter or a study in which one is continually interested as a whole, and in the due perspective of a common intellectual atmosphere, and my purpose to-night has been to do this, and to show that the study for which our Society exists, besides being an anodyne for, and a refuge from, the increasing strain and stress of our necessary daily work, is also a science, and, as a science, is concerned with the constant and ineffable mystery of organic life.

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### NOTES ON CORSICAN BUTTERFLIES.

By WILLIAM E. NICHOLSON, F.E.S.

MR. STANDEN has already given an excellent account of his experiences in collecting in Corsica (Entom. xxvi. pp. 236-238 and 259-263), and, although I visited the island a month later, I have but little to add thereto. Some of the species, such as *Argynnis eliza* and *Satyrus neomiris*, which were rare at the time of his visit, occurred in considerable abundance later on, while *A. paphia* var. *anargyra* was in profusion. It is not my intention, however, to give any further account of collecting in the island, but merely to draw attention to some of the interesting problems presented by its butterfly fauna.

Corsica, although like England, belonging to Mr. Wallace's class of recent continental islands, presents a very much larger amount of differentiation, and its isolation must be of far greater antiquity. A map of Pleistocene Europe, given in Mr. Boyd Dawkins' 'Early Man in Britain,' shows Corsica and Sardinia united to the mainland of Italy in the direction of the islands of Capraja and Elba. The greater part of the sea in this direction is within the 100-fathom line, though there are some deeper channels within the 500-fathom line. I am, however, inclined to think that isolation must have taken place rather early in this period to account for some of the phenomena that the fauna presents.

One of the most striking features of the fauna is the absence, notwithstanding the fact that the island is almost entirely mountainous, with some peaks over 8000 feet high, of any of the strictly alpine species of the mainland. Among the most conspicuous absentees are the genus *Parnassius*, *Colias palæno*, and *C. phicomone*; the alpine blues, such as *Lycæna pheretes*, *L. eros*, and *L. orbitulus*, *Lycænidae* generally being very poorly

represented; the genus *Melitæa*, though represented by at least a dozen species on the mainland; and, most striking of all, the genus *Erebia*, though upwards of twenty species occur in Switzerland and South Eastern France. I was at first very puzzled to account for the complete absence of all mountain butterflies; and the only explanation that I can offer is, that the island was isolated from the mainland before the increasing cold in the arctic regions, which was to culminate in a glacial epoch for Europe, had driven the species which now inhabit the alps of Europe from the circumpolar region, whence they probably originated. From the number of genera common to the palæarctic and nearctic regions, the greater part of the European fauna appears to have been of circumpolar origin; but probably a very much less degree of cold would have sufficed to drive many of the species south, those which are at present found only in the mountains of Europe being the last to retreat before it. Considerable traces of local glaciation exist in the island itself, as the presence of alpine tarns in rock basins under the steep cliffs near the summits of the higher peaks, such as the Monte Rotondo and the Monte d'Oro, and the smooth rounded surfaces presented by the higher slopes of the mountains; but there is nothing to show that the glaciers were of any extent, and, as pointed out by Mr. Wallace in a recent article in the 'Fortnightly,' no lake basins occur in the island in the lower valleys. The cold, however, may have been sufficiently intense to have destroyed any species of the Eur-African fauna which may have inhabited the island. The only African butterfly at present found there is *Charaxes jasius*, which is also found in the South of France. I gathered from a French Coleopterist that there was a certain proportion of African forms among the beetles.

The entire absence of alpine butterflies is but one of the features of interest that the fauna presents, and probably nowhere so close at hand can the gradation from species identical with those on the mainland "through slight varieties, local forms and insular races to well-defined species," to use Mr. Wallace's words, be so well studied.

The same remarks apply, of course, to the sister island of Sardinia, from which the isolation must be comparatively recent, as the straits of Bonifazio are only ten miles across at the present time. I have not, however, been able to obtain a Corsican record of *Epinephele nurag*, which may possibly be confined to Sardinia. It appears to be rare in collections, and was described by Ghiliani from Sardinian specimens.

Slight variation is exhibited by a number of species found in the island, and many of these are noted by Mr. Standen, e. g., *Lycæna baton*, *L. astrarche*, *Vanessa c-album*, and *Epinephele ianira*, to which might be added *Argynnis paphia* var. *anargyra*, which, although not peculiar to the island, is, I believe, more



abundant there than on the mainland, and tends to wholly replace the type.

Among the species presenting what may be considered local forms may be classed *Polyommatus phlœas* and *Lycæna ægon* var. *corsica*. The *P. phlœas* are mentioned by Mr. Standen as belonging to the form *eleus*, and no doubt they are close to this form. They do not, however, exhibit the tails quite so conspicuously as the true *eleus*, and they are considerably blacker than any *eleus* that I possess. Moreover, they do not appear to be temperature forms like *eleus*, but rather to be a well-marked local race. They occur throughout the season, and at various altitudes. The majority of my own specimens came from the slopes of the Pointe Ceppo, just above Vizzavona, where the mean temperature would be decidedly below that of the South of England. *L. ægon* var. *corsica* has been exhibited by Mr. Jones to the Entomological Society. The female of this variety is beautifully shot with blue, and the spots on the under side vary considerably. In the majority of specimens they are large and pale.

There are five well-marked examples of insular races, viz., *Euchloë tagis* var. *insularis*, *Vanessa urticæ* var. *ichnusa*, *Satyrus semele* var. *aristæus*, *Pararge megæra* var. *tigelius*, and *Syrichthus sao* var. *therapne*. *E. tagis* var. *insularis* is an insular race of a species which varies considerably on the mainland, the var. *bellezina* found in the south-east of France being intermediate between this variety and the type as found in Spain. *Vanessa urticæ* var. *ichnusa* is evidently a nascent species. It would appear to be single-brooded, though the larvæ resulting from the hibernating females may be found over a considerable period. It chiefly frequents the mountainous parts of the island, and a number of specimens were noticed disporting themselves on the summit of the Monte d'Oro, at nearly 8000 feet. The inner marginal spot on the fore wings is occasionally quite well developed, and faint traces of the central spots are sometimes visible, either the result of reversion or of an occasional cross with an immigrant from the mainland. As pointed out by Lang, this variety is quite distinct from the so-called *ichnusa* occasionally bred in England, being much less angular in outline than the type. It is curious that an intermediate form, the var. *turcica*, should be found in the Balkans and Asia Minor. *Satyrus semele* var. *aristæus* is very distinct from the type. The fore wings are more fulvous, and the female has three small white dots near the margin of the hind wing, which occasionally occur in the type, but are more usual in this variety. M. Mabille considers it a distinct species, and says that "the larva presents constant differences, and never varies itself." A study of Corsican forms, however, renders one's conceptions of a species very indefinite. The specimen figured by Lang hardly represents the



specimens I captured at Corte, which, although brightly marked, are scarcely larger than the English form. This variety is stated by Lang to occur also in Sicily, which is strange if it is a form differentiated by isolation, as Sicily does not appear to have been joined to Corsica in recent geological time otherwise than by the mainland of Italy. *Pararge megæra* var. *tigelius* is considerably smaller than the type, and the darker markings are not so pronounced. Southern *Megæra* have, however, the same tendencies on the mainland, and I possess somewhat similar forms from Malta. *Syrichthus sao* var. *therapne* is a very distinct form of a species which is rather more constant than most of its congeners on the mainland. It is considerably smaller than the type, and the white spots have a yellowish tinge. Like other purely Corsican butterflies, it has a wide range in the island, occurring at the sea-level near Ajaccio, and at an elevation of over 4000 feet near Vizzavona.

The well-defined species peculiar to the island, in common with Sardinia, are *Papilio hospiton*, *Argynnis eliza*, *Satyrus neomiris*, *Epinephele nurag*, and *Cænonympha corinna*. Some of these, though perfectly distinct, have a rather close affinity with species occurring on the mainland. The best known of them, *P. hospiton*, clearly has affinities with *P. machaon*, and, from its more dusky appearance and less definite markings, it might be the older form. It must, however, be quite distinct at the present time, as *P. machaon* is not uncommon in the island, often frequenting the same banks, and I never heard of the capture of a hybrid. If really the representative of a form from which *P. machaon* may have sprung, it must have been isolated at a very remote time, and *P. machaon* must have subsequently obtained a footing in the island. Several larvæ were found in July on *Peucedanum paniculatum*; they are paler than those of *P. machaon*, and are said by M. Génè, quoted by Lang, to be spiny. In the early stages they certainly are spiny, in common with those of *P. machaon*; but they gradually lose their spines on their different ecdyses, and the adult larvæ are quite smooth. *Argynnis eliza* and *Satyrus neomiris* are not so closely allied to any continental species. As pointed out by Lang, *A. eliza* is probably nearer to *A. niobe* or *A. adippe* than to *A. aglaia*, to which the greenish ground colour of the under side of the hind wings lends it a superficial resemblance. *S. neomiris* has its nearest congener in *S. arethusa* on the mainland—an affinity better seen in the females of the two species, as indeed is usual with allied species. It is, however, quite distinct, and varies (especially in the light band on the fore wings of the male) very considerably in itself. *Epinephele nurag* has already been noted as possibly not occurring in Corsica; its nearest congener on the mainland is probably *E. lycaon*. *Cænonympha corinna* was by far the commonest butterfly near Vizzavona, occurring up to an

altitude of about 6000 feet on the Monte d'Oro. Its nearest ally on the Continent would appear to be *C. dorus*, which has very similar habits. It appears, unlike *C. dorus*, as far as my experience with that insect goes, to have a succession of broods throughout the summer, and the later broods are much darker than the earlier ones. It is stated by Lang to occur in Sicily, and, on the authority of Boisduval, in Calabria. Should this be the case, it is of course only a species having rather a limited distribution. It would, however, be interesting to compare the Corsican forms with those from the mainland. In Hofmann's 'Schmetterlinge Europas' Corsica and Sardinia are the only localities given for the species.

Lewes, Feb. 22nd, 1894.

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### CALLIMORPHA HERA IN SOUTH DEVON.

[By E. F. STUDD.

THIS insect is undoubtedly now naturalised in South Devon, whatever may have been the history of its original introduction. The 'Entomologist' contains numerous records of its capture in this neighbourhood, and within the last three years the Rev. C. F. Benthall, an ardent entomologist, has come to reside at Cofton, a village between Starcross and Dawlish, in the centre of its haunts. The very first summer of his residence there he captured several, and has done so each year since, his garden being a favourite locality. The fact that directly an observant entomologist settled and worked in the district, he took the insect in considerable numbers, and also found the larvæ, nearly full fed, in his garden, suggests the possibility that it may have been there from time immemorial, and only required to be regularly worked for to be taken. The fact that, without being specially worked for, isolated specimens were from time to time unexpectedly taken, over a long series of years, in the neighbourhood of, and even at some considerable distance from, its present known centre, points in the same direction. Add to this that that centre was not known as such, and is not a place likely to be pitched on by a casual entomologist, unless specially directed there, and the possibility becomes a probability.

In the year 1892 Mr. Benthall captured, or had brought to him by the villagers, thirteen specimens, including four of the var. *lutescens*. From a female, taken in that year on Sept. 12th, he obtained a batch of eggs, laid on the 14th. These hatched on the 22nd and 23rd, and on Oct. 5th he very kindly presented me with ten of the small larvæ, from which the following notes were made:—



On that date they were slightly under one-eighth of an inch long, and, viewed with the naked eye, were almost exactly like the young larvæ of *Arctia villica*, except for the slightly ringed appearance hereinafter mentioned; in fact, I find that, with that exception, I have in my note-book, describing the larvæ of each species independently, made use of practically the same words. They were then—viz., at twelve to thirteen days old—of a greenish greyish yellow, with darkish hairs, and they had a suggestion, but no more, of being slightly ringed. They usually lay straight out, but if touched at once rolled into a ball. I fed them at first on dandelion leaves and borage; but after about a week, finding that they preferred dandelion, I supplied them with leaves of that plant alone.

On Oct. 10th they commenced to moult for the first time, finishing about the 13th, and I lost one, which died during the process. On Oct. 27th they commenced their second moult, finishing about Oct. 30th. On the last-named date their length was about three-sixteenths of an inch, and they were slightly darker than before, the body being a dark greyish brown, with what appeared to be a broad medio-dorsal band of bronzy yellow. On Nov. 10th they commenced their third moult, and had all finished by the 15th except one, which remained very small. By Nov. 22nd, however, this small one had fed up to the size of the others, so I assume it must have moulted in the meantime, unnoticed by me. On Nov. 15th their average length was rather over a quarter of an inch; sides dark brown, almost black, with a bright coppery dorsal band, with two white spots on each segment. The belly, prolegs and claspers were mouse-coloured, and they were covered with dark bristly hairs.

From this third moult until Dec. 3rd they did not seem to move or feed, but appeared to be hibernating. On Dec. 3rd all but two seemed to wake up, and recommenced to feed. By Dec. 15th all but the two were about three-eighths of an inch long. On Dec. 16th one of the small ones recommenced to feed, and on Jan. 1st the remaining one did so. By Jan. 18th this last was slightly larger than the others, which had apparently shrunk, having had the appearance of hibernating for some little time. On Jan. 20th, the frost having just broken up and the weather being very mild, some of them recommenced feeding, and during the night of Jan. 21–22 one moulted for the fourth time, and by Feb. 6th they had all done so. During the night of Feb. 11–12th one moulted for the fifth time, and up to Feb. 26th six had done so. Those which had moulted were much lighter and brighter than those which had not, and grew very rapidly, the largest being then about three-quarters of an inch long. Behind the white spots on each segment two fulvous brown blotches had appeared, one above the other in a slanting direction.

On March 1st the largest was just under one inch long, and

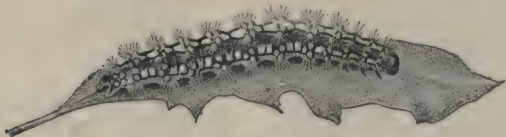


during the night of March 8-9th it moulted for the sixth and last time. On March 12th this one was an inch and a quarter long, and on the 19th an inch and five-eighths. On April 17th it commenced to spin threads on the muslin cover of its box, but languished, and by May 1st was unmistakably dead.

By April 13th all the remaining larvæ except one, which had died, had moulted for the sixth time, and I was able to preserve a full-grown one.

The following is an exact description of the larva after its final change, made from living specimens. The previous descriptions have merely been to give the general appearance as they would strike a casual observer at the different ages, the markings of the full-fed larvæ, though probably all present clearly enough in its earlier stages if viewed through a powerful magnifying-glass, not being clearly visible to the naked eye.

The larva after its final change is about an inch and a quarter long, increasing to an inch and five-eighths when full-fed. It is almost cylindrical, tapering slightly from the centre both ways, towards the head and anal segment. The head, as Newman observes (*Entom.* vi. p. 34), is black and glabrous, and narrower than the second segment. It is also, as he says, distinctly notched on the crown, and with convex cheeks. The legs, like the head, are shining black. The back is black, and is marked on each segment with a cluster of warts. The cluster extends the whole breadth of the back and length of each segment, meeting the similar clusters on the adjoining segments, and so giving the appearance of a ragged dorsal band in the young larvæ. The upper part of the sides is black; the lower portion and the belly, prolegs, and claspers mouse-colour tinged with lilac, the prolegs and claspers being streaked with fulvous-brown markings. On each segment, in a line with the spiracles, are white marks with a lemon tinge and a slight indication of a black border to them, one towards the front of each segment and one towards the rear, and four fulvous-brown warts one below the other. From the warts on back and sides spring tufts of light fulvous-brown bristles. The spiracles, nine in number, are black. The claspers are stretched out behind when at rest, and the larva generally lies perfectly straight out, but if touched at once rolls into a ball.



The accompanying drawing, made from a living specimen, for which I am indebted to Mrs. Benthall, gives an admirable representation of the general appearance of the larva.

When full-fed the larva spins a white semi-transparent web of threads strained very tight, looking much like an inverted tent, and in it, as in a cradle, changes, in from a week to ten days, to a reddish brown shining pupa, about three-fourths of an inch long.

My first larva to pupate successfully was on May 18th, when two turned. Another pupated on June 15th, but the remainder, after spinning up, wasted away and died. Of those which pupated on May 18th one died shortly after, and the other emerged some time between the mornings of June 16th and 17th. I was away from early morning till late at night on the 16th, on a collecting expedition, and unfortunately did not look at my pupæ till the morning of the 17th, and therefore am unable to say whether the imago emerged during the day or night. When I found it, it was banging about, and unhappily had slightly chipped one of its wings.

On the morning of July 5th I found that the remaining one, which had pupated on June 15th, had emerged during the night or early morning. It, too, was banging about, but had luckily not injured itself. Both these specimens are typical, but in each case the hind wings are slightly puckered, the right more than the left.

Mr. Benthall informs me that from the remainder of the eggs referred to, providing in all about sixty larvæ, exclusive of the ten he gave to me, he succeeded in rearing seven, including two of var. *lutescens*. I saw his larvæ some time in April, when they seemed in about the same stage as mine. He kept them in a heated greenhouse, feeding on dandelion leaves, and, probably owing to the greater heat, those he bred had not the puckered hind wings which mine had, and which seem usual in bred specimens, as noted by Mr. Robinson ('Entom. Record,' iv. p. 243). Mine were reared in my study, which was kept at the ordinary temperature of a living room, and they were not near the fire. After they pupated I sprinkled the webs occasionally with tepid water.

Mr. Benthall assures me that he found the larvæ cannibals, especially if kept short of food. I did not myself observe this, but mine were constantly supplied with plenty of fresh leaves. His experience, contrary to that of Mr. Robinson (*l. c.*), is that the var. *lutescens* is much rarer than the typical scarlet form, and though he has taken them of all shades of yellow, and once, as he tells me, saw one of a milky white colour (which unfortunately he failed to capture), he has not seen any orange ones.

Oxton, Exeter, Jan., 1894.

Since writing the above I have submitted it to Mr. Benthall, and his observations entirely agree with mine, with the following

exception, which I think it best to give in his own words. He writes:—"Mine pupated *under ground*, forming a slight earthen cocoon. The only pupa I have got in a natural state was also in an earthen cocoon, between the branches of a dandelion root, which I had cut about two inches below the surface and one inch below the junction. This emerged, but was crumpled a little."

I was moving about a good deal while breeding mine, and as I wished to take them about with me for the purpose of observation, I was unable to keep them supplied with earth. Is it usual for larvæ, whose nature it is to pupate under ground, to spin webs and pupate in them if they have no earth?

Feb. 2nd, 1894.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 44.)

### CYMATOPHORIDÆ.

*THYATIRA DERASA*, L. — This widely-spread insect, though found in almost every suitable locality, occurs in but comparatively few places in abundance. Nowhere in Ireland have I found it in such swarms as occasionally I have seen of *T. batis*. It chiefly affects wooded districts in the lowlands, whereas *batis* is to be found in mountain glens at considerable altitudes. The following localities do not in any way exhibit its wide distribution, but show a varied selection of shore and inland:—

It is fairly abundant in Galway, at Clonbrock and Castle Taylor; at Drumreaske, Co. Monaghan; near Kenmare and Killarney, Co. Kerry; Killynon and elsewhere in Westmeath; and in parts of the Co. Wicklow. Only occasionally found at Knocknarea, Sligo (*R.*); Derry (*W. E. H.*); Renvyle, Connemara, Co. Galway; Favour Royal, Tyrone; Farnham, Co. Cavan; Cromlyn (*Mrs. B.*), Westmeath; Killiney, Kingstown, and Howth, Co. Dublin; near Banagher, and Toberdaly, King's Co.

*THYATIRA BATIS*, L. — Equally widely distributed as the last species in woodlands, but, though only of occasional occurrence in some districts, it occasionally appears in great numbers. On the wooded shores of L. Gill, Co. Sligo, I have seen it in clouds at sugar; also on the shores of L. Oughter, near Killeshandra, Co. Cavan; and it is very common at Clonbrock, Co. Galway. In mountain glens, in Kerry and elsewhere, I have met with it in great abundance, and as persistent and troublesome as *Xylophasia monoglypha*, though usually it is rather skittish and shy



when occurring singly. Some examples, apparently quite fresh specimens, have very little pink in the spots. The trivial aberration *juncta* of Tutt occasionally occurs.

CYMATOPHORA OR, *Fb.*—Very local and rare. All the Irish specimens I have seen are characterised by, (a), absence of rose or purple tint; (b), ground colour of a paler grey than the generality of British specimens, a trait notable also in Irish *C. duplaris*; (c), stigmata inconspicuous, not being thrown into relief by a fuscous ground colour, as in most Scotch and English specimens; (d), the fasciæ on either side of the stigmata are strongly marked. The above description, however, is written from examples from five Irish localities only, the one from Clonbrock having a darker ground than the rest. One example is of so distinct a character that I think the aberration worthy of a name. It is of a female from Farnham, Co. Cavan, and displays the most extreme of the above characters, the ground colour being pearly white, almost obliterating all traces of the stigmata, and the fasciæ are formed of very broad and almost black lines. One other similar example, from Scotland, I was shown some years ago, in Mr. Grigg's cabinet, at Bristol. I propose to designate it as ab. *gaëlica*, to indicate the two countries in which the specimens have occurred.

In comparing the Irish form with those of Great Britain, I am in some difficulty, as Mr. Tutt, with his extensive knowledge of the subject, mentions that out of a long range of British specimens he has very few that are not tinged with rose-colour; and again, that the Scottish insects are of a paler ground colour than the Kentish, and presumably those of Southern England generally. See the description of var. *scotica* in 'British Noctuæ.' I must accept this dictum as generally correct, but will add that the Irish *C. or* has a paler ground than Mr. Tutt's Scottish series, or those from Sutherland and the I. of Lewes in Mr. Adkin's fine collection. Also that Mr. Adkin's series from Darenth Wood approximate more nearly to our form, both in the absence of rose tinting and in the grey ground. I have bred specimens from Epping Forest without any rosy tinge, but, as Mr. Tutt describes, very dingy, one being so brown and devoid of markings that it would have been difficult to identify if it had been a single specimen. Dr. Buchanan White writes (*in litt.*), "I have none with a white central band. Ground colour rather dark. I have no English or Irish examples to compare with, but the one French specimen I possess is browner and more unicolorous than my Scottish series."

Localities: Markree Castle, and several at Rockwood, L. Gill, Co. Sligo, where Mr. Russ also took the larvæ on an aspen; Powerscourt, Co. Wicklow (*Greene*), one specimen; one ditto Derry (*C.*); and ditto Clonbrock (*R. E. D.*), of dingy brownish

grey ground colour, like the English form, fasciæ not dark but well-defined.

*Ab. gaëlica.* Farnham, Co. Cavan, one female specimen.

*CYMATOPHORA DUPLARIS*, *L., var. ARGENTEA*, *Tutt.*—The almost unicolorous Linnean type does not occur to my knowledge in Ireland. Irish examples, from which Mr. Tutt described this variety, are all of a silvery grey colour, but the transverse bands vary much in width and in depth of tone, being sometimes only slightly represented by a shading of dirty grey. The most brilliant specimen I have ever seen was taken at Drumreask, Co. Monaghan, and was almost white and black when freshly taken, and is comparable to the *ab. gaëlica* of *C. or* in the trenchant contrast of coloration. In addition to the Lincolnshire locality noted by Mr. Tutt, the late Frederick Bond informed me that the *var. argentea* is commonly taken in the South of England; and also that Mr. Tutt's *var. obscura* is not confined to Scotland, but was bred by Mr. Bond from Tilgate larvæ near Brighton. Dr. Buchanan White also writes that none of his Scottish *C. duplaris* can be called pale, though variable in tone of ground colour, but that his English specimens have more of a brownish tinge, and are smaller. Apparently the Irish forms of both species differ in a parallel direction from those of Scotland and parts of England.

Localities: Ballycastle, one (*Curz*), Co. Derry; Ardara, one (*J.*), Co. Donegal; Knocknarea, rare (*R.*), Rockwood, Hazlewood, and Markree Castle, occasional, Co. Sligo; Drumreask, Co. Monaghan; Favour Royal, not very rare; Altadiawan, numerous, Tyrone; Farnham, Co. Cavan, a few; Cookesborough and Killynon, Westmeath, not very rare (*Miss R. and K.*); Belleisle, Fermanagh; Glendalough and Moycullen, Connemara, and Merlin Park, Co. Galway; Crossmalina, Co. Mayo, not rare; Tinahely (*Bw.*), Co. Wicklow; Cappagh, Co. Waterford; Killarney (*B. and K.*), near Kenmare, scarce, and Glengarriff, not scarce, Co. Kerry; Crookhaven, one, Co. Cork.

[NOTE.—I omitted, when recording the larvæ of *Bombyx quercus*, taken at Killarney by Mr. Watts, to say that the resulting imago was *var. callunæ*.]

(To be continued.)

## NOTES ON *BALTIA*, MOORE, AND *MESAPIA*, KIRBY.

By JAMES EDWARDS, F.E.S.

In his original description of *Mesapia shawii*, Bates says (Henderson and Hume, Lahore to Yarkand, p. 305) that the neuration is the same as that of *peloria*, Hew., except that the second branch of the subcostal is emitted long after the end of



the cell. Moore, in founding the genus *Baltia* on the same insect (Ann. & Mag. Nat. Hist. 1878, p. 228), disposes of this fiction, and describes the venation accurately enough, but in language which might not seem quite clear to students accustomed to deal with the veins on the numerical system. As a matter of fact, veins 5, 6, 7 and 8 are stalked from the upper angle of the cell in the male, and in the female vein 5 arises at or just beyond the upper angle of the cell; the five subcostal branches of which Moore speaks are present in all the specimens which I have examined,—that is to say, vein 8 is present but extremely short, as in typical *Pieris*; indeed, the position of vein 5 in the fore wing (which is the same as Moore's radial branch of the subcostal) is the main feature, in point of venation, which separates *Baltia* from *Pieris*. A few other Pierid genera have nearly or quite the same position of vein 5 in the fore wing, but they are otherwise widely separated from *Baltia*. These are—*Pseudopontia*, Plotz, a curious African genus, with the cell not more than one-third as long as the fore wing, and veins 5, 6 and 7 stalked; *Elodina*, Feld., a genus found principally in the Australian region, in which vein 5 springs from the upper angle of the cell, and 6, 7 and 8 are stalked, but vein 8 is given off about midway between the upper angle of the cell and the base of vein 7; *Phyllocharis*, Schatz, in which vein 5, the stalk which bears veins 6, 7, 8 and 9, and vein 10, all spring from the upper angle of the cell; and *Phulia*, H.-S., in which vein 5 and the long stalk which bears veins 6 and 7 spring from the upper angle of the cell. Moore's expression, "allied to *Mesapia*," is misleading with regard to the genus *Baltia*: allied to *Mesapia* it undoubtedly is, in that both *peloria*, Hew., and *shawii*, Bates, are Pierids; but there the alliance ends, as the two insects are very distinct both in facies and venation.

Dr. Dixey (*in litt.*) does not share Mr. Kirby's opinion (*ante*, p. 100), that the specimens in the Hope collection at Oxford are so different from Groum-Grshimailo's figures of *Pieris shawii* (Rom. Mem. sur. Lep. p. 222, t. 10, fig. 2, *a, b*) that they probably represent a distinct but allied species.

*Synchloë butleri*, Moore, agrees with *shawii* in point of venation, save that the disco-cellulars of the hind wing are much more oblique, and the cell, consequently, more pointed.

*Pieris peloria*, Hew., is, for all practical purposes, an *Aporia*; that is, if *hippia*, Brem., is to be regarded as an *Aporia*; but if the latter name be restricted to *crategi*, L., then the name *Mesapia* might be applied to those *Aporias* in which the hind wing below is yellow or yellowish, with the veins more or less broadly margined with black. It would then include *hippia*, Brem., *martineti*, Ob., *goutelli*, Ob., *bieti*, Ob., &c.

Mr. Kirby's description of the venation of the fore wing in



*peloria*, Hew. (*ante*, p. 101), seems somewhat at variance with the fact, particularly as he says "the third (subcostal) emitted a little beyond the cell and running to the costa just before the apex, the fourth emitted about half-way between the end of the cell and the apex." It is not easy to see how this description applies to the insect under consideration at all, because vein 7 (which, I presume, is the same as Mr. Kirby's fourth subcostal, as it certainly is the fourth subcostal of Schatz) arises at a point at least twice as far from the end of the cell as from the apex of the wing. Mr. Kirby's third subcostal I cannot identify with certainty; but it is clear that in *peloria*, Hew., there is normally no vein in the fore wing emitted beyond the cell, except at a distance from the cell two-thirds as great as the width of the cell, and the phrase "a little beyond the cell" hardly expresses this. In the fore wing of *peloria*, Hew., veins 6, 7 and 8 are stalked from the upper angle of the cell, the distance between the origin of veins 6 and 7 being about equal to the distance between the upper angle of the cell and the base of vein 6, and vein 8 is about two-thirds as long as 7; in short, the venation is practically that of typical *Aporia*. The long hairs at the base of the wings in *peloria*, Hew., although they are wanting in typical *Aporia*, afford no distinction from *Metaporia* as exemplified by *nabellica*, Bdv. *Pieris davidis*, Ob., with the hind wing below like *Mesapia*, has the *Pieris* antennal club and heavy wing-fringes, and the fork formed by veins 7 and 8 is small, as small as in typical *Pieris*; this species is, however, rather a *Metaporia*, for it exhibits, in the suffused blackish post-median band which reaches from the costa to vein 2 on the fore wing above, the commencement of the post-median dark band proper to *Metaporia*. The *Metaporia*-pattern is indicated in *soracta*, Moore, further developed in *belucha*, Marsh, and *leucodice*, Ev., and reaches its greatest development in *nabellica*, Bdv.

*P. dubernardi*, Ob., is a true *Pieris* in antennal club, wing-fringes, in the minute fork formed by veins 7 and 8 of fore wing, and more particularly in the suffused blackish spot in cell 3 of the fore wing and the black border round the tip of the latter from veins 3 to 9, although the hind wing below is yellow, with the veins broadly, and a suffused post-median band, blackish. The yellow under-surface of the hind wing, with broadly dark veins, appears to originate in *P. napi*, L.

*P. mesentina*, Cr., has veins 6, 7 and 8 of the fore wing as in *Aporia*; but the antennal club, though not narrow enough for typical *Aporia*, is too narrow for *Metaporia*, and the essential wing-pattern differs from that of either.

The foregoing notes are the result of my review of certain Pierids in Mr. Elwes' collection, in the light of Mr. Kirby's article (*ante*, p. 99).

Colesborne, Cheltenham, March 12th, 1894.

FURTHER NOTES ON CERTAIN VARIETIES OF  
*SPILOSOMA LUBRICIPEDA*.

BY W. H. TUGWELL.

It appears that the first to give the name *radiata* to the var. of *S. lubricipeda*, now referred to *zatima* of Cramer, was Haworth; but, so far as I can discover, he only described it, no figure being given, and certainly that description (as given in the old Trans. Ent. Soc. i. 366, 1809-1812) is extremely vague. He describes it thus: *Spilosoma radiata*, Sp. 5, *radiata*, "Alis anticis nigris, maculâ magnâ lobatâ variiesque flavicantibus, Haw." No mention is made of that important and most striking feature of the insect, viz., the black hind wings, with their finely pencilled ochreous-yellow nervures or veins, and yellow fringes. In fact, Haworth's description rather applies to the var. of *S. menthastri*, as figured by Curtis in 'British Entomology,' plate 92, var. *walkeri*. If Haworth was describing his insect from the *zatima* type, he could not have failed to note so striking a feature as the hind wings of *zatima* always are. The hind wings vary to some extent, but out of some four hundred specimens that I have bred not a single one fails to show these black hind wings with finely pencilled lines. The earliest English figure I can find of *radiata* is in Wood's 'Index Entomologicus' additions, plate 52, fig. 1657, published in 1839. This clearly gives a male exactly of the type I have bred so many of, and is drawn from a specimen, taken in Yorkshire, which was in Mr. Bentley's cabinet; but the date of capture is not given. In the 'Entomologist' (vol. vii. 169, 1874) the late Mr. Edward Newman gave an excellent woodcut of a female, under the name of *Arctia radiata*, and makes the following remark: "Mr. Dawson (of Driffild, Yorkshire) has most obligingly lent the specimen for figuring in the 'Entomologist.'" The late Mr. John Curtis published a beautiful figure, of a very similar variety, under the name of *Arctia radiata*. A similar variety of *Arctia menthastri* occasionally, but very rarely occurs" (E. N.). Unfortunately Mr. Newman failed to state where this figure was given, and it has been thought by some that he had confused it with that of *menthastri* var. *walkeri*! but as he also mentioned the var. *walkeri* at the time, that certainly gives the idea that he had a knowledge of two separate figures, and, although I cannot discover such a plate, yet I have good reason to believe that Curtis did have *radiata*, sent to him from Lincolnshire, as the following extract from a letter to me, from Mr. W. H. B. Fletcher, clearly shows, and it is very probable that he would figure so beautiful a form. Mr. Fletcher writes:—

"The *radiata* form has been known to occur on the very extensive sand-hills of Lincolnshire, lying on the coast between Boston and



Cleathorpes, for years past. Why Yorkshire has claimed a monopoly of it I do not know. An old uncle of mine, the Rev. J. Mossop, of Covenham Rectory, Louth, used to breed it from the Theddlethorpe and Mablethorpe part of the coast. He had considerable correspondence with Curtis, through the older Dale, about the form, and I think insects passed as well as letters. Mr. Mossop died about 1870, and his widow gave me some of the letters, but I cannot find them now. In any case I have some of the moths. One of them, a female, is as nearly as possible like that figured in the Entom. (vii. 169, 1874); another, a male, resembles the figure in Humphrey and Westwood (plate 18) after allowing for bad drawing; a third is about equal to the figure in the Entom. (xxvi. 257), var. *deschangei*. Curtis's figure I have not seen, but it would not surprise me if it were drawn from one of my old uncle's specimens."

Mr. C. W. Dale, too, gives me some additional information on these captures of the Rev. Mr. J. Mossop, and, writing me on March 3rd, he says, "My father, the late James Charles Dale, had *three* specimens of Mr. Mossop's *radiata* (instead of one that I mentioned, *ante*, p. 97)," and also states "that the Rev. J. Mossop's insects were bred from larvæ that he found at Saltfleet, feeding on elder, in August, 1836, and bred in June, 1837."

This evidence most conclusively substantiates the fact of Lincolnshire producing the form *radiata*. The following extract from a letter from Mr. W. Hewett, of York, on the Driffeld specimens, is important. I had written him to ask if the Driffeld specimens he had seen were the same as the one figured from Mr. Dawson in the 'Entomologist' (vii. 169, 1874), and if caught or bred? He replies as follows:—

"The three Driffeld specimens I referred to in my letter to Mr. Porritt are identical in form with the one figured in the 1874 Entom., but that figure was not drawn from either of those examples. I have not the slightest hesitation in saying *they are genuine*, as I know the party well. They are captured specimens, *not bred*. I do not think the owner ever made an exchange in his life. The specimens are set on common household pins" (W. H.).

Thus all the English specimens of *radiata* are, so far as I can find, reported either from Yorkshire or Lincolnshire, whilst most of the notices of var. *walkeri*, Curt., are from Scotland.

Heligoland is generally spoken of as the home of *zatima*; but at any rate it is clearly proved that, for the past fifty years, this grand form, too, has occurred in both Yorkshire and Lincolnshire.

Greenwich.

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## VARIATION OF LEPIDOPTERA AT RINGWOOD.

By J. H. FOWLER.

CONSIDERING the extraordinary season of last year, it seems surprising that the Diurni did not show any marked increase in variation; the great drought, one would have thought, would at least have caused a good many dwarfs, but in my collecting I saw but few. *Epinephele ianira* and *E. hyperanthes*, also *Argynnis paphia*, occasionally produced such, but the Vanessidæ and Argynnidæ were unusually fine and well marked. Var. *valesina* outnumbered the female type of *A. paphia*, and was frequently very pale, almost blue all over; the dark form, in fair numbers, occurred also.

A few species have shown a tendency to albinism or bleaching: thus, a specimen of *Argynnis euphrosyne* with left primary white, the dark markings almost obsolete; *A. aglaia* with the primaries centred with large pure white spaces filling up several of the cells, the secondaries with the first four cells each pure white also; in opposition to this, a female specimen, which I took upon the same day, has the primaries almost black; *A. adippe*, secondaries (above) transversely streaked with silver bars, four upon the left and two upon the right wings, the superiors are curiously blotched with silvery white. The yellow-spotted form of *A. paphia* was not more numerous than usual. I took a specimen of *A. euphrosyne* irregularly marked with yellow, but distinct from the *paphia* form; another has the spots of the right primary broken up and displaced.

A female *E. ianira* has the fulvous spaces evenly divided into small spots, and a male is not much larger than a specimen of *Cænonympha pamphilus*.

The best variety amongst the Rhopalocera is undoubtedly a splendid example of *Argynnis aglaia* (*charlotta*\*) ; primaries with the third discoidal spot absent, fourth enlarged; submarginal area with the usual spots, the three first and anal ones confluent to marginal lunules; marginal line black, finely centred with fulvous, inside; the row of pale spots are much enlarged, central line fine. Secondaries, a round black spot near the base, near from which a long well-defined hammer-headed bar proceeds; marginal line and pale spots same as upon the primaries, but inside the marginal line there are seven broad black bars nearly reaching to the central line; on the under surface the secondaries have four very large silver bars arched from the base, a row of central spots, the first yellow, the other six normal; those upon the margins, seven in all, are enlarged, the first two slightly

\* A figure of this interesting variety will be given in the May number of this Journal.—Ed.

elongated; the primaries, from the anal angle upwards, nearly represent the upper surface, some spots being confluent; the tips have each four large and one small silver spots. This specimen is a male, very richly coloured upon all the wings.

Amongst the Heterocera I took a specimen of *Callimorpha dominula* with the secondaries suffused all over with black; a female *Euchelia jacobææ* with the carmine band extending from the base, along the costal area, and down the outer margin almost to the inner margin of superiors, otherwise typical. I have now several pupæ resulting from ova deposited by this insect.

I have often noted that the so-called bleaching occurs frequently, but in irregular form, in many species, and under the following conditions: firstly, quite white; secondly, with a suffusion of dark bluish, shaded with grey; thirdly, with spots or spaces paler than that of the ground colour. Of the first form a few examples will suffice: *Epinephele ianira*, *E. hyperanthes*, *Argynnis euphrosyne*, *A. aglaia*, *Polyommatus phlæas*, and one *Colias edusa* (a few *Lycæna corydon* from Dorset). Of the second form, *Vanessa io*, *V. atalanta*, *V. urticæ*, *Satyrus semele*, &c.; and of the third, *Hesperia linea*, *Cænonympha pamphilus*, *Argynnis euphrosyne*, &c. *Satyrus egeria* is often greasy and very pale. A specimen of *Euchloë cardamines*, with several almost transparent spots; I think the aberration of the two last-mentioned species is due to lack of scaling or pigment.

If *Vanessa atalanta*, *V. io*, or *V. urticæ* are bred in numbers and crowded, the second form referred to can often be produced. I have always considered this kind of aberration due to overcrowding; the larvæ changing or about to change to pupæ are subjected to almost constant motion and activity, as they crawl over each other, and disturb those which have only just pupated, —a critical time, when the least pressure would be likely to injure them in some way.

It seems very probable, as Dr. Chapman suggests in the 'Entomologist' of January last, that these spotted aberrations are caused by pressure, there being only one thing against this theory in general, and that is that many specimens are bleached or spotted upon the inferiors only which are protected in the pupal stage; in such cases would not both wings show signs of injury?

The only moth I possess of the bleached form is a specimen of *Emydia cribrum*, in which the right superior is almost white, the other wings being normal.

It will be noted that all the above species are ground-feeders, and this doubtless has something to do with it; very few of them ever pupate more than a few inches from the ground. I have found pupæ of *Argynnis paphia* four and five feet from the ground; but in pale spotted varieties of this species the aberrant characters are of a more regular and definite form.



I remember, about seven or eight years ago, assisting a well-known farmer in Dorset to carry his hay. I was appointed to work upon the rick, and, whilst so doing, I found a great number of *Epinephele ianira* pupæ, but they nearly all died, and the few which emerged did not exhibit any aberration; pressure in this case undoubtedly caused such a mortality; the grass upon being cut must have overlaid most of them. I also took pupæ of other species, but forget whether I bred any imagines from them.

Ringwood, January, 1894.

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## NOTES AND OBSERVATIONS.

MIGRATION OF LEPIDOPTERA.—Notwithstanding the tropical heat of Brazil there is a large rainfall, and what is an important factor in the case, the rain falls at frequent intervals during the summer, thus inducing a rapid and luxuriant vegetable growth, resulting in immense forests and thickly wooded hills, with creepers and twiners matting the forest trees together. The rocks disintegrate rapidly in Brazil, forming a rich soil, so that even the tops of the mountains are covered with a luxuriant growth of trees and underwood. No wonder therefore that there is so great a profusion of insect life where the conditions for their nutrition are so very favourable. While staying at Santos, the local newspapers reported that an immense swarm of "borboletas" (butterflies or moths) had invaded S. Vicente, a seaside village near Santos. The insects had arrived in such immense numbers that they formed a cloud which, they reported, even obscured the sun! They invaded the village, swarming into the houses and flying against everything. The greater portion of the swarm was said to have passed over the village with a strong wind which was blowing at the time off the land and in the direction of the sea. Large numbers were reported to have fallen into the sea, and to have been subsequently cast up on shore in such large quantities that the shore was said to be strewn for some distance with the bodies. Wishing to see what I could of so extraordinary an occurrence, I took the steam-tram down to S. Vicente about three days afterwards. No traces of the passage were to be seen in the village: so my friend and I went to the seashore, and there at high-water mark we found abundant proofs as to what the swarms consisted of. We found large numbers of the bodies of a moth about an inch and a-half long, and, so far as we could judge, of a creamy grey colour, resembling that of the English puss-moth (*Dicranura vinula*). The bodies had, however, been so much knocked about on the sand that they were very imperfect, and not in a state for classification. For some considerable time previous to the appearance of the swarm the weather had been very rainy, and, so far as I could learn, unusually so for the time of the year. The temperature had therefore been rather lower than usual. When, however, the weather cleared up, there was a considerable and sudden rise of temperature for several days, and to this I think must be attributed the sudden appearance of an immense number of these moths simul-



taneously; their gradual issue had probably been delayed by the colder rainy weather. It would seem that the direction of the wind influences to a certain extent the direction of flight of butterflies. When crossing from Rio Janeiro by steamer to the island of Paqueta, in the bay of Rio, I saw butterflies pass frequently across the bay with the wind, but I saw none pass against the wind. They were going from the direction of Nitheroy towards Maua, on the other side of the bay. When I returned, about a week afterwards, from Paqueta to Rio, I observed the same flight across the bay, and from more or less the same direction. They did not go past in a swarm, but singly or two or three together, and at sufficiently frequent intervals as to attract attention.—WM. C. TAIT; Oporto, January, 1894.

**MACROGLOSSA STELLATARUM AND COLOUR.**—Referring to Mr. Shaw's article (*ante*, p. 20), and Mr. Bedford's and Mr. Johnson's observations thereon (*ante*, p. 62), in the translation of Professor Hermann Müller's work, 'The Fertilization of Flowers' (Macmillan & Co., 1883), p. 119, it is stated that "*Viola calcarata*, L., greatly surpasses *Viola tricolor* in the size of its flower and the length of its spur (13 to 25 mm.). It is fertilised only by Lepidoptera, chiefly by *Macroglossa stellatarum* (25 to 28 mm.), our quickest worker. I have seen this insect visit 194 flowers on different plants in  $6\frac{3}{4}$  minutes, and I could see it cross-fertilise them by means of its proboscis, dusted with white pollen." The different species of *Viola* are discussed with reference to the insects fertilising them, including nocturnal and other Lepidoptera, amongst the species mentioned as visitors being *Vanessa urticae*, *Rhodocera rhamni* (*Viola odorata*), *Pieris rapae* and *P. napi*, and *Rhodocera rhamni* (*Viola sylvatica*, Fries), and *Pieris rapae* and *P. napi* (*Viola canina*). The evolution of colour in violets, from an original yellow, is also alluded to, and the colours of flowers with reference to their fertilisation by diurnal or nocturnal species touched upon; and in this connection may it not be that the cause of the purple, lilac, and black shades of *Viola* being neglected by *Macroglossa stellatarum*, (as mentioned by Mr. Shaw) is that they are the more advanced forms? With reference to *Caltha segetum* mentioned by Mr. Shaw (*ante*, p. 21), although this plant does not appear to be referred to in the above work, a list of insects visiting *Caltha palustris* (including Diptera, Coleoptera and Hymenoptera) is given, pp. 79 and 80, but no Lepidoptera are included in the list; is it not, therefore, probable that neither species of *Caltha* is suitable for fertilisation by Lepidoptera? and is not the true reason why any particular flower is shunned by certain insects and visited systematically by others, that the visiting insects alone are able, having regard to the mutual formation of flower and visitor, to fertilise the particular species of flower, rather than that the insect has acquired a taste for the particular nectar yielded, as suggested by Mr. Bedford? The whole basis of the above work appears to proceed on the first view. With regard to species of *Geranium*, on p. 157 it is stated that *Pieris napi* visits *Geranium robertianum*, and that twenty-one species of Lepidoptera have been found upon the flowers of *G. sylvaticum*, which is visited by seventy-four species of various orders. The flowers visited by *Macroglossa stellatarum* are stated to be (as observed), *Dianthus carthusianorum*, L., *Æno-*

*thera biennis*, L., *Echium vulgare*, L., *Ballota nigra*, L., *Nepeta glechoma*, Benth., *Erythraea centaureum*, L., *Syringa vulgaris*, L., and *Onopordum acanthium*, L. Reference is made to the rapidity with which the Sphingidæ perform their work as fertilisers, and it is stated that most nocturnal flowers have adapted themselves specially to those Lepidoptera. The first place, as fertilisers generally, is given to bees, the Lepidoptera taking only the second or third place, before or after. It is, perhaps, needless to refer to the many other interesting facts and conclusions given in the above work.—GEORGE W. OLDFIELD; 2, Longridge Road, Earl's Court, S.W., February 12th, 1894.

EARLY MORNING APPEARANCE OF BUTTERFLIES.—I think it would be interesting if someone would undertake the compilation of a list of British Rhopalocera, showing the earliest, latest, and average hours during the day when the species are on the wing. On Aug. 18th, 1893, at 6.15 a.m., I observed quite a number of *Polyommatus phlæas* flying about, there being fully two dozen of this species on one flower-bed. The weather at the time was intensely hot and dry, the mean temperature being then 72°, and an exceptionally low humidity prevailed. Perhaps others can show an earlier time of flight.—F. W. FREIR; Elm House, Walthamstow, Jan. 22nd, 1894.

APLASTA ONONARIA IN THE BURNEY COLLECTION.—From your notice it appears that four specimens of the above were ticketed as having been take by my friend Bernard Piffard. Allow me to say that that gentleman never captured but *one*, which was duly recorded in the E. M. M., vol. iii., p. 110, and which he generously gave to his great friend the late Henry Doubleday, in whose cabinet it, no doubt, still remains, unless that fine collection has become scattered.—H. G. KNAGGS; Camden Road, London, N.W., March 5th, 1894.

LYCENA ARGIOLUS.—During last season the great abundance of *L. argiolus* in East Devon, especially in districts near the sea-border, is quite worthy of record. It would be interesting to hear whether this species was as common elsewhere in the south, or did it, like *Colias edusa*, only abound in this locality last year? I have repeatedly noticed that *L. argiolus* is usually plentiful after the *Ilex aquifolium* has been profuse in its berries the winter preceding. Can any reason be suggested for this coincidence?—B. STAFFORD CHOPE.

COLIAS EDUSA VAR. HELICE, AND C. HYALE.—I think it may be of interest to record the exceptional abundance of this species in East Devon, from the end of July to the middle of Sept., 1893. In one field of *Trifolium repens*, during the latter part of August, I captured as many as I cared to take away (amongst them some fine females), and could have taken scores more in the same field when the crop was being cut a week later. The var. *helice* was captured in a rough field at the end of May in the same locality, though only three specimens of *C. hyale* were seen during the season. With reference to Mr. Clarke's remarks, bearing out Mr. Bankes' statement that *C. hyale* seldom ranges so far west as Dorchester and Weymouth, I am unable to confirm the experience, for during the last ten years or more I have repeatedly captured it at intervals all along the S. Devon coast, and at



Marazion on the Cornish coast ; even, indeed, as far west as the cliffs between Penzance and the Land's End, where in 1881 it was plentiful ; but the var. *helice* I have never heard of being taken further west than Sidmouth.—B. STAFFORD CHOPE.

BISTON HIRTARIA AND CLEORA VIDUARIA IN SCOTLAND.—In reference to Mr. Hodgkinson's note (*ante*, p. 65), I should like to remark that this is the first time I ever heard of *C. viduaria* being found in Scotland. *Biston hirtaria* is widely distributed in the Rannoch district, but appears to be scarce. I have seen it on the birch-trees near Annet, Carrie, and Carnghouran. It does not appear to differ much from the London form.—WM. REID ; Pitcairle, N.B.

REISSUE OF HÜBNER'S EXOTIC LEPIDOPTERA.—Hübner's works on Lepidoptera have long been very scarce and costly, and we are pleased to learn that an enterprising Belgian, M. P. Wytsman, is bringing out a new edition of the 'Sammlung Exotischer Schmetterlinge,' and likewise of the 'Zutrage.' We have long been surprised that so little has been done in bringing out new editions of some of the rarer illustrated entomological books ; for some of great value are practically unobtainable, and would, we believe, easily find a sale sufficient at least to repay the cost of production.

NOTE ON SPILOSOMA RADIATA, HAW.—This grand variety was described by Haworth in the 'Transactions' of the Entomological Society of London, published in 1812, p. 366. It appears to have been confounded by Newman (Entom. vii. 169) with an insect which Curtis figured and described under the name of *walkeri*. They are both figured in Humphrey and Westwood's work. I have three specimens of *radiata*, given to my father by the Rev. J. Mossop, who had them in June, 1837, from larvæ he found feeding on elder, at Saltfleet, in August, 1836. I have also specimens of the York form, which is somewhat intermediate between *radiata* and the type. The specimens of *zatima* in Mr. Richardson's cabinet do not appear exactly to accord with my old specimens of *radiata*.—C. W. DALE ; March 1st, 1894.

RARE BRITISH DIPTERA IN 1893.—Amongst some duplicates given to me by my friend Mr. Beaumont, and which were taken by himself in Ireland in August last year, was a solitary male specimen of *Sciomyza rufiventris*, Mg. This, Dr. Meade informs me, is new to Britain ; but on referring to Mr. Verrall's list, under the family Helomyzidæ, I find a single genus and species, i. e., *Tephrochlamys rufiventris*, Mg. I think this may perhaps refer to the same dipteran, but have not had an opportunity of submitting the fly to Mr. Verrall ; possibly Dr. Meade had overlooked this genus when determining my specimen. *Meigenia majuscula*, Rond., is also new to Britain ; a single specimen of this handsome Tachinid was taken by my daughter, in my garden at Dulwich, in June last. This species will be described by Dr. Meade in his forthcoming Supplement to the Tachinidæ. *Degeeria pulchella*, Mgn. : this species is also very rare, having only been described by Dr. Meade from a specimen or two in Mr. Dale's collection, which were captured at Glanvilles Wootton. I am indebted for two female specimens to my friend Mr. Adkin, who bred them from larvæ

of *Peronea maccana*. *Urellia eluta*, Mg.: a solitary male of this rare species of Trypetidæ was taken by myself while sweeping herbage at Lewisham, in September last.—T. R. BILLUPS; 20, Swiss Villas, Peckham, S.E., March, 1894.

NOTES ON WASPS DURING 1893.—As in other parts of England, wasps were very abundant in this district of East Anglia during the spring and summer of last year, but I do not think that they were more numerous than in 1887, which summer was also remarkable for its heat and drought. They made their appearance much earlier in 1893 than is generally the case, and many nests were found in full activity by the latter part of May. On June 7th I removed, for so early in the season, a very large nest, which was being built in a dis-used pigeon-house. I suspended it from the rafters of an outhouse, in order to watch them in their building operations. They worked rapidly at it for a time and the wasps were very numerous. I examined the nest almost daily until July 10th, when I left home for a few days. On my return on July 19th I found to my astonishment that the wasps had entirely disappeared, the nest being in perfect condition and fully protected from the weather, and it had been quite undisturbed after its removal. As far as I could see there was nothing to account for their extraordinary disappearance. I believe that they were one of the tree wasps, but the nest was so unexpectedly abandoned that I was unable to ascertain the species. On Aug. 4th I was shown a hole in a bank in which I was told was a very strong nest, but as I could not see any of the insects about I dug it out of the ground and found that it was deserted. I was assured that no attempt had been made to destroy it, and the nest seemed quite perfect; and there were no dead insects to be seen, which I should have expected to find if they had been destroyed. Although I handled the nest and carefully examined it, not a single wasp made its appearance. From what I was told, it could not have been deserted for many days. On Aug. 8th I took from the branch of a pear-tree a nest of one of the tree-wasps. That, too, was quite deserted, but I was informed that a short time previously the wasps simply swarmed about the nest, so much so that the part of the garden in which it was situated was carefully avoided. I observed that some of the cells in this nest were sealed up, but as no wasps made their appearance they apparently died while in the pupal state. The greater number of the cells were entirely empty. What the cause was which made the wasps forsake their nests so early in the season I cannot tell. I carefully examined them, but I could ascertain nothing to account for it. I have never before known such cases as these, as in all the nests which I have previously observed the wasps have been quite active until the autumn nights have become cold. I should like to know if a like occurrence has been observed elsewhere, and if the desertion of the nest by the wasps is in any way to be accounted for; I should be glad to learn the reason. — EDWARD RANSOM; Sudbury, Suffolk, Jan. 29th, 1894.

MELANIC FORM OF PHIGALIA PEDARIA (= PILOSARIA).—Mr. George Rose, of Barnsley, has very kindly sent me a fine series of *P. pedaria*, which he bred in February last from ova deposited by a black female



in the spring of 1893. The series comprises sixteen males and five females; all of the latter and six of the males are black; three of the other males are similar in colour to the southern form, but the majority of the remainder appear to me to be more strongly marked than is usual, even in northern specimens. Mr. Rose informs me that the first black example of this species he ever saw was taken about ten years ago, by Mr. Henry Willetts, at Wharnccliffe. Ova from black females, paired with black males, have been obtained by Mr. Rose this year, and it will be very interesting to hear of the result obtained next spring.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W.

IMPORTED LARVÆ.—A larva of *Pyrrharctia isabella* was found in a box of Canadian apples on Dec. 15th, 1892, in a Chester provision shop. It resembled *Arctia caia*;  $1\frac{1}{2}$  in. long; thickly clothed with uniformly short bristly hairs (as if they had been cut with scissors); head small and shiny black; legs and claspers black. The short, bristly clothing coloured in three unequal divisions—black, three segments; russet-red, like *A. caia*, six segments; and, lastly, the two anal segments black. There is a slight collar of russet-red bristles behind the head, and a few black bristles (dorsally) on the segment preceding the last two. At the time tassel-fringes were worn on ladies' mantles, &c., and the caterpillar was picked up as a fallen tassel. I kept it till the end of February, 1893, when it died. I am indebted to Mr. J. Fletcher, Ottawa, Entomologist to the Canadian Government, for its identity. He tells me it is one of the commonest Canadian insects, and non-injurious, as it feeds on low weeds, such as dandelion, plantain, grass, &c. Two larvæ only of *Heliothis armigera* were obtained, from Valencia tomatoes in June. They were nearly full-grown and pupated in due course; imagines emerged July 9th and 19th. These caterpillars have been scarce, home-grown and Jersey tomatoes commanding the markets. I get them only from the Valencia boxes.—J. ARKLE; Chester, Jan., 1894.

SECOND BROODS IN 1893.—*Agrotis segetum* (Sept. 12th to Oct. 10th), both sexes very variable. *A. exclamationis* (Sept. 26th), one specimen; a fine form with the dark orbicular and reniform spots absent; the lower wings are smoke-coloured with white fringes. *Leucania impura* (Sept.), paler than the June and July brood. *L. pallens* (Sept. 9th), colours warmer than in the summer brood. *Triphæna orbona* (Aug. 13th to Sept. 13th), much paler. *Caradrina cubicularis* (Aug. 13th to Sept. 13th), many of the specimens had their wings infested by a scarlet mite. At the particular spot where I sugared, some species appeared in unusual numbers, as *Noctua plecta*, *N. xanthographa*, *A. segetum*, and *Phlogophora meticulosa*. Others, as *Miana strigilis* var. *athlops* (swarming last year) and *Xylophasia polyodon*, were, in comparison with former seasons, poorly represented. A fine *Gonoptera libatrix* fell a victim to the sweets on July 25th.—J. ARKLE; Chester.

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## CAPTURES AND FIELD REPORTS.

COLLECTING IN THE NORFOLK BROADS IN 1893.—I spent nine days (July 26th to Aug. 3rd) of last season collecting in the Broads, the chief object of my visit being to complete a series of *Leucania brevilinea* (a few specimens of which I had taken on a previous visit to the same locality in August, 1889); in this I was very successful, the nights of July 25th, 26th and 27th producing some twenty specimens in almost perfect condition, besides a number of worn examples netted and released after due inspection. The field of operations consisted of large reed-beds stretching alongside the River Bure; part of these beds had been recently cut, and on this cut portion one could walk without injuring or trampling down the growing reeds. *L. brevilinea* was accompanied by *Tapinostola fulva* in varying shades of colour from pale grey to brick-red, occasional *Noctua rubi*, with *Apamea leucostigma* (*fibrosa*), and *Cænobia rufa* (*despecta*) also put in an appearance. *Lithosia griseola* and var. *stramineola* were also present, with *Epione apiciaria* and *Cidaria testata* flitting round the alder bushes; several *Phibalapteryx vittata* (*signata*) and *Acidalia immutata* were also netted. On July 28th I rowed to Barton Broad (some twelve miles by water), taking the requisite entomological *impedimenta* in the boat with me, for a stay of two or three days; the weather was perfect, and the row a most enjoyable one, the enjoyment being considerably enhanced by the sight of occasional specimens of *Papilio machaon* flying in the sunshine, and sometimes lazily flapping across the river. The fens at Barton produced at night *Celæna haworthii*, *A. leucostigma*, *Calamia phragmitidis*, *Noctua rubi*, *Caradrina quadripunctata* (*cubicularis*), and *T. fulva*, in more or less abundance, but *L. brevilinea* was here apparently scarce, one only being observed. *C. haworthii* and *A. leucostigma* were very partial to the flowers of various grasses, also to the honeydew on the leaves of the willow bushes. *Leucania impura* also swarmed in the latter situation. *Chilo phragmitellus* was plentiful, flying to the lamp with which I searched the bushes. A long day's work amongst the "gladdous" *Typha latifolia* and *T. angustifolia* brought many larvæ and pupæ of *Nonagria arundinis* (*typhæ*) to light, but only three pupæ of *N. cannæ*. An evening spent amongst the reed-beds on Barton Broad found *Paraponyx stratiotata* in abundance, also *Hydrocampa nymphæata*; but one specimen only of *Nonagria neurica* was taken, at rest on a reed-stem: this species was a great disappointment; I worked hard, but could not find its head-quarters. In the daytime *Crambus selasellus* was occasionally disturbed amongst the grass alongside the numerous dykes and ditches so characteristic of all fen lands. Amongst the Tortrices I obtained, one afternoon, a beautiful series of *Terias caudana*, by beating round an alder carr; accompanying these were occasional specimens of *Grapholitha penkleriana*, *Phoxopteryx siculana*, and *Phlæodes immundana*. Entomologists accustomed to fen collecting know the extraordinary effect a slight chill in the atmosphere has upon fen Lepidoptera; if there is even a slight mist rising over the level fen, you may as well stop at home. One night I had a curious exemplification of this fact: rowing down the river I observed the fatal mist creeping over the fen, but, having started, I did not care to return at once, so landed and lit the lantern as usual. Up to 10 o'clock the bag was two *T. fulva* only, and these were taken at rest on the reed-stems; not an insect moved where the previous evening they had been flying in abundance. I was about



returning to the boat, when I noticed a bank of clouds coming up in the distance; thinking they would probably cause a slight breeze to spring up when they got nearer, I lit a pipe and waited; the clouds came over, and the light wind which came with them dispersed the mist, causing a warmer feeling in the atmosphere. In a few minutes insects were on the wing, and I returned home with full boxes in lieu of empty ones, patience (with a little knowledge added) meeting, in this instance, with its due reward.—G. H. CONQUEST; 6, Greenleaf Road, Hoe St., Walthamstow, Feb., 1894.

COLLECTING IN THE NEIGHBOURHOOD OF WORKSOP IN 1893.—Now that the season of 1893 is over, and the new year has dawned upon us, I have gathered together the records of the past twelve months, in the hope that they may not be altogether uninteresting to the readers of the 'Entomologist'; for although this district cannot boast of a fauna such as attaches to the New Forest, or even other less-favoured localities, still it may possess some slight interest in being one but little known or worked by entomologists. And here I should like to mention that, although distant only eight miles from Sherwood Forest, except where specially mentioned, I have not included it in the radius of miles worked. I am in hope, too, that this paper may prove especially interesting to the increasing number of lady entomologists, as (with a few exceptions) the whole of the Lepidoptera named have been taken by my mother, my sister, and myself, during our country drives and rambles. For this reason it will be noticed that the Noctuæ are very poorly represented, owing to the little night-work that has been done. The season here, as elsewhere, was a particularly early one, our first captures occurring on Jan. 30th, on palings, when we took two *Hybernia leucophaæaria* and three *Cheimatobia brumata*. These continued throughout February, and in March were joined by *H. progemmaria*, *Anisopteryx æscularia*, *Larentia multistrigata*, *Scotosia dubitata*, *Phigalia pilosaria*, *Scopelosoma satellitia*, *Teniocampa gothica*, *T. cruda*, and *Cerastis vaccinii*. On March 21st the first *Brephos parthenias* was seen, and on the 23rd and 29th we sought it at its head-quarters in Sherwood Forest, only to find it as abundant as ever and in perfect condition. We took a beautiful series, the fore wings being greatly varied, and shading from light to dark through many gradations. As I have read of many failures to take *B. parthenias* this season, perhaps a few notes as to its habits, gathered from personal observation, may not be without interest. The place where we principally take this species is a long grass drive in Sherwood, and here anyone may be certain of getting a good bag. It is only necessary to go on a bright sunny morning in March, and look in the right place, which is not up amongst the birch trees, round which countless numbers can be seen flying, but down on the ground. *B. parthenias* loves the sunshine, and may be seen every few yards basking in it on the ground, forming a lovely picture as he sits with fully expanded wings on the bare sandy patches, or olive-green of the grass-grown drives, the orange of the hind wings contrasting brilliantly with the sober colouring of the surroundings. In this way it can be easily taken; but if by any chance it should be missed, it is quite useless to give chase into the woods, as the colour of the under side blends so perfectly with the dead bracken that it is quite impossible to keep it in sight for more than a few yards. I have been told that *B. notha* often frequents the same localities as *B. parthenias*, but I have never been fortunate enough to see one, although I have always been on the look-out for it. During the next few months our list of Geometers was

greatly increased, and included the following:—*Uropteryx sambucata*, *Rumia cratægata*, *Metrocampa margaritata*, *Selenia lunaria*, *Odontopera bidentata*, *Crocallis elinguaris*, *Amphidasys betularia* (an intermediate variety between the ordinary form and var. *doubledayaria*), *Hemerophila abruptaria*, *Boarmia repandata*, *B. rhomboidaria*, *Tephrosia crepuscularia*, *T. punctulata*, *Geometra papilionaria*, *Ephyra punctaria*, *E. trilinearia*, *Asthena luteata*, *Acidalia remutata*, *A. incanaria*, *A. aversata*, *Cabera pusaria*, *C. exanthemaria*, *Corycia temerata*, *Macaria liturata*, *Halia vaularia*, *Panagra petraria*, *Fidonia atomaria*, *F. piniaria*, *Abraxas ulmata*, *Lomaspilis marginata*, *Larentia didymata*, *L. pectinitaria*, *Emmelesia decolorata*, *Eupithecia centaureata*, *E. abbreviata*, *E. coronata*, *E. exigua*, *E. vulgata*, *E. indigata*, *E. assimilata*, *E. lariciata*, *E. castigata*, *E. rectangulata*, *Thera variata*, *Hypsipetes elutata*, *Melanthia ocellata*, *M. albicillata*, *Melanippe montanata*, *M. fluctuata*, *M. subtristata*, *Anticlea badiata*, *Coremia unidentata*, *C. ferrugata*, *Camptogramma bilineata*, *Scotosia dubitata*, *Cidaria corylata*, *C. fulvata*, *C. immanata*, *Iodis lactearia*, *Emmelesia albulata*, and *Cidaria suffumata*. In the Bombyces, Cuspidates, and Noctuæ we took *Hepialus hectus*, *H. vellea*, *Euchelia jacobææ*, *Chelonia caia*, *Arctia mendica*, *A. lubricipeda*, *Orgyia pudihunda*, *Bombyx quercus*, *Cilix spinula*, *Platypteryx falcula*, *Notodonta dromedarius*, *Thyatira derasa*, *Acronycta psi*, *Leucania conigera*, *Hydræcia nictitans*, *Axylia putris*, *Xylophasia rurea*, *X. polyodon*, *Mamestra brassicæ*, *Apamea basilinea*, *A. oculea* (very varied), *Miana strigilis* var. *æthiops*, *Caradrina cubicularis*, *Agrotis nigricans*, *Triphæna ianthina*, *T. interjecta*, *T. pronuba*, *T. fimbria*, *T. comes*, *Noctua augur*, *N. c-nigrum*, *N. brunnea*, *Euperia fulvago*, *Cosmia trapezina*, *Epunda viminalis*, *Euplexia lucipara*, *Hadena adusta*, *H. oleracea*, *H. contigua*, *Plusia pulchrina*, *P. iota*, *P. gamma*, *Amphipyra pyramidea*, *Mania typica*, and *Euclidia* m. On the evening of July 28th I went with my brother, the Rev. E. G. Alderson, to Sherwood Forest, in order to sugar for *Euperia flavago*. The night, which was favourable at starting, turned cold about 9 o'clock, so our bag was not so good as we had hoped for. However, we added to our captures *Noctua baja*, *N. triangulum*, *Ennomos angularia*, and *Xylophasia scolopacina*, the last new to us. Of *E. fulvago* we only took one battered specimen, which my brother caught on the wing about 8 p.m. We were evidently unfortunate enough to visit its favourite haunt at a time between the emergence of the two broods, as I read with pleasure that one of your correspondents, Mr. W. Ferris, had taken the species in plenty on Aug. 29th (Entom. xxvi. 327). During the greater part of August, and early in September, we were away from home, so my records are a blank for that time. On returning, however, we found that many of the autumn moths were stirring; I took, amongst others, *Xanthia ferruginea*, *Miselia oxyacanthæ*, *Anchocelis litura*, *Phlogophora meticulosa*, *Macroglossa stellatarum*, and *Himera pennaria*. In November and December we were still busy, with *Oporabia dilutata*, *Cheimatobia brumata*, *C. boreata*, *Hybernia aurantiaria*, and *H. defoliaria*. I have never seen the last-named species in such beautiful variety, and we were fortunate in getting a long series. Of *Diurni* this district is particularly barren, and it is quite an event to see a butterfly on the wing other than the cabbage white; 1893, however, proved rather an exception to the rule, if not in quantity at least in quality, as it produced one specimen of *Vanessa c-album* and two specimens of *Thecla w-album*, neither of which species had been heard of in Nottinghamshire for a number of years. I



may also mention the great abundance of *Vanessa atalanta*, attracted by the half-decayed fallen fruit in our orchard. This closes my list for 1893, and we are hoping for a still better season in 1894. At present it certainly seems as if it would prove to be an even earlier one than its predecessor, as we have begun collecting to day (Jan. 17th) with a long and variable series of *Hybernia leucophaæaria*. This is certainly the earliest of our moths, and one which we always welcome, as its appearance is a sure sign that winter is drawing to a close, and that the delights of mothing, for another year, are again before us.—E. MAUDE ALDERSON; Worksop, Jan. 17th, 1894.

NOTES FROM RINGWOOD, 1893.—A peculiar feature in the habits of most of the large forest butterflies during the drought through June to July 7th, 1893, was their partiality for frequenting the dense portions of the enclosures, and almost deserting the ridings; evidently the butterflies suffered severely from the want of moisture, such species as *Limenitis sibylla* and the large fritillaries being known to imbibe large quantities. Upon taking an excursion for a day's collecting in June to the Roe enclosures, I followed the bed of one of the streams in search of water to drink, and for the first time was disappointed in not finding sufficient to quench my thirst, not a pool being left, but I was well repaid by the sight I witnessed; the said bed of the stream for more than a mile was literally crowded with butterflies, the bulk being composed of *Argynnis adippe*, *A. paphia* var. *valesina*, and *Limenitis sibylla*, also *Argynnis aglaia*, *A. selene*, and *A. euphrosyne*, *Epinephela hyperanthes*, and others in lesser numbers; they were mostly busy probing the sand and gravel in search of water, some were quietly resting with folded wings, others seeking the shady nooks underneath the banks, but withal with a constant flutter of wings and restlessness, denoting how ill at ease they were. Although I netted several good varieties in other parts of the forest, I did not see anything but var. *valesina* worth taking upon this day, and of which I took twenty-six specimens. Altogether it was an entomological sight once seen never to be forgotten. *Gonopteryx rhamni* was unusually plentiful in the larval stage, *Limenitis sibylla* normal, imagines of *Vanessa cardui* almost nil, whilst *V. atalanta* was out from May to Nov. 11th; several late larvæ reared in-doors emerged up to the 26th, and a few of the last to turn into pupa died, becoming soft and watery, a fate which I believe all the late out-door specimens meet with. *Pararge egeria* was over before *P. megæra*, which had a late brood to Nov. 12th, in company with *Polyommatus phleas*. I have added a fresh butterfly to my list from here, viz., *Thecla betulæ*, the larva of which I discovered in May, and quite by accident: I was beating *Prunus spinosa* in search of thorn larvæ, when to my surprise I got a number of *betulæ* larvæ, and have bred a nice series; it was not at all local, the area in which it occurred extending quite a mile around. I had no idea this species was found there, as I had never seen it upon the wing (until later). This may be a hint for others to obtain it elsewhere, by beating the thorns anywhere around trees. I went to the spot the first week in August, and saw several *T. betulæ* on the wing, also a few *Lycæna argiolus*; but owing to the rough nature of the ground both species were difficult to net. Nearly all the forest butterflies were over by the second week in July, at least a month sooner than usual. I certainly prefer a season when insects are longer upon the wing; the large fritillaries, for instance, did not last good for more than fifteen days or so, getting torn and rubbed. *Lycæna argiolus* was well out by April 17th, and very dark specimens were

obtained. *Vanessa polychloros*, from March 14th to April 16th, was very abundant; and later the larvæ were in clusters upon almost every sallow in the forest. *Gonopteryx rhamni*, common in February; on the 17th I saw eight together, both sexes being represented. *Vanessa urticae*, at the same time, but scarcer later on. *Colias edusa* was scarce during early September. *Argynnis euphrosyne* appeared on April 27th, and later was very abundant; whilst *A. selene* was scarce. *Syrichthus alveolus*, common. The spring brood of *Pararge egeria* was quite a week later than usual; I did not observe it until April 1st. Every autumn I breed a number of this species from ova, the imagines emerging during the winter and spring; but strangely these invariably produce the summer (dark) form. I suppose this is caused by being reared in a high temperature, *i. e.*, upon a shelf in my dining-room. The form I take at large in the spring has the light spots much enlarged, especially those surrounding the eye-spots upon the primaries.

The Heterocera, like the Rhopalocera, were very early upon the wing during the season of 1893, and general collecting commenced from the second week in March, but many species usually common were extremely scarce, of course with an occasional exception. I planted a large bed of *Nicotiana affinis* in anticipation of obtaining *Sphinx convolvuli*, but was sadly disappointed, as I only saw two or three; this species seems to be gradually getting scarce, very few records have been made of its capture for the last two seasons. I found a few larvæ of *Chærocampa elpenor* feeding upon willow-herb. The larvæ of *Smerinthus ocellatus* were plentiful upon sallows; also *Dicranura vinula*. *Macroglossa stellatarum* (two broods) was very abundant, especially in the autumn; I obtained several specimens in-doors flying against the window; they were all females, and doubtless were seeking a place for hybernating. *Hemaris bombylifformis* was also very common feeding upon blue-bells; and *H. fuciformis* more so than usual upon violets and primroses. From an old sallow stump I chiselled out from sixty to seventy pupæ of *Trochilium bembeciformis*, and there are many small larvæ still there. *Sesia asiliformis* larvæ and pupæ are to be found in oak stumps plentifully in the forest about April. I got a larva of *Zeuzera æsculi* from a twig of holly. Larvæ of *Cossus ligniperda* are playing havoc with the elms around here; I worked one tree and took many larvæ in their second year's growth, but the formic acid was almost unbearable, it nearly overpowered me, although *Vanessa atalanta* seemed to revel in it. *Drepana cultraria* was frequently seen among the beeches, but difficult to get; they rise from the shrubs and soar to the tree tops. *Sarothripa revayana* was scarce; *Earias chlorana* and *Chleophora (Hylophila) bicolorana*, fairly plentiful. Amongst rushes in the meadows I found a colony of *Nudaria senex*, at dusk, and took them freely; the males were pale yellowish brown, and the females slaty brown in colour. *Calligenia miniata* and *Lithosia rubricollis* were met with occasionally; but *L. griseola*, one specimen only. *Emydia cribrum* was fairly abundant the last week in May, and very dark; Mr. Taylor, of Bournemouth, discovered this species in abundance near that town, but quite a month later than I got it here. *Demas coryli*, from beech trunks, from April 17th, at Ridley wood. *Bombyx rubi* was very common, and upon the wing for a long time. *Euchelia jacobææ*, I have never seen the larvæ of this species so plentiful before; the ragwort was eaten in shreds almost everywhere around here. *Callimorpha dominula*, *Euthemonia russula*, *Chelonia villica*, fairly common. *Hepialus humuli* was double-brooded; I took a few on Sept. 26th, and saw some



undulating over a sallow bush, one of which I netted. *H. hectus*, scarce. A few larvæ of *Notodonta chaonia* and pupæ of *Acronycta ligustri* were found. Larva of *Cymatophora ridens* undoubtedly was the commonest larva in the forest; by beating, every stroke brought them down in numbers; I got quite tired of them. *Taniocampa miniosa*, ranking next; nearly all the oaks bordering the enclosures had one or two companies feeding under webs, and averaging about fifty larvæ in each. *Trachea piniperda* and *Taniocampa munda*, common at sallows in March; the latter are all of the clay coloured form, whilst those from Brockenhurst are reddish,—a contrast, seeing the distance from here is only sixteen miles, and the surroundings almost identical. I bred out a few *Asteroscopus sphinx*. One of the best insects of the season was *Heliothis dipsacea*; I discovered a locality for it in June, and found it in abundance; my friend Mr. Bloomfield, of London, and I had excellent sport with this species; but what a wary insect to capture: the first one I saw fell an easy victim, not so with the other specimens in the good series I obtained; many a mile I tramped for them under a scorching sun. You quietly walk amongst the heaths and up starts an insect, pale in appearance, but for all the world like a *Plusia gamma* in all its habits: upon its first flight it usually settles within a few yards from whence it started; but each time you fail to capture, the flight gets longer, and I observed that in nearly every case, although it may lead you for nearly half a mile, it gradually works its way around and very near to the original place of starting. The best plan is to approach cautiously, and bending low, quickly glide the net over it; upon settling, it always selects an open space, and with quivering wings runs well up under a clump of heath. When the insect is under the net, it is best to lift the leno, as *H. dipsacea* immediately rises, and with the rapidity of *Macroglossa stellatarum*. I did not observe it after sundown; but about this time I have seen specimens get right out of sight into a clump of heath. *Leucania pallens* had a late brood; I took it from ivy in October; and in this way *Hadena protea* and *Agrotis puta* were both plentiful. *Uropteryx sambucata* produced two broods; I caught a rather small female at ivy, and at same time several larvæ also; rather unusual for both to appear together. *Epione advenaria*, more plentiful than usual. *Tephrosia biundularia* was well out by April 1st; and I did not observe *T. crepuscularia* until April 4th. The latter produced three distinct broods: the first, large; the second, medium; and the third, September, small and dark. *T. consonaria*, common, April 6th. *Boarmia cinctaria*, from March 29th to April 20th; and, later, *B. roboraria*, fairly common. *Himera pennaria*, abundant. On April 6th, *Selenia lunaria* appeared. *Hybernina leucophæaria*, from Jan. 27th to Feb. 27th. *Pachynemia hippocastanaria*, from April 16th to the autumn, with a slight interval. *Lobophora virescens*, April 13th; and larvæ of *L. carpinata*, upon sallows in June and July, were plentiful; I also netted a few *L. sexalisata*. *Cidaria siderata*, in October, upon ivy. *Corycia temerata* and *C. taminata* were both common. Three fine specimens of *Aventia flexula* fell to my lot; one upon a black currant bush in my garden. *Botys hyalinialis* came to light (4). I found the larvæ of *Euchloë cardamines* upon plants of purple honesty in my garden, feeding upon the seed-heads. *Vespa crabro* was very abundant everywhere around here; the females, in March, were very large; neuters, during the summer; and males, later. In conclusion, to show what a remarkable spring that of 1893 was, the hawthorn was out in full bloom by April 16th; that and the blackthorn being in flower together, the hedges for miles around looked

just as if a coating of snow lay upon them.—J. HY. FOWLER; Poulner, Ringwood, Feb. 1894.

OBSERVATIONS IN NORTH MIDDLESEX, 1893.—The past entomological season, throughout England, has been chiefly remarkable for the uniform high temperature, prevalent from the earliest weeks of March. Here the willows were in full flower on March 11th, while by the 23rd the hedges had everywhere assumed their spring foliage. On April 5th the birches were in leaf in Oxhey and Pinner Woods, the wild cherry-blossom at the same time being very abundant and fine. Cold winds during the second week in April rather checked the general advance, but on the 17th I noticed that most of the forest trees were green, and the grass in all the meadows was burnt up. How the drought developed, and continued practically until November, I need not add. The effect upon insect-life was everywhere apparent, the majority of species being at least three weeks before their normal time. In the list of observances and captures appended will be found several insects new to the Middlesex fauna, or at any rate not recorded in Mr. Cockerell's valuable Catalogue, published in the 'Entomologist' (vols. xxiv. and xxv.), and in my notes (xxvi. 57). The credit of these new discoveries is due to the diligence of Mr. George Wall, who has furnished me with an interesting list of Lepidoptera observed at Grims Dyke, the boundary estate of Middlesex at this point; but the greater number of his captures are represented by single specimens, so that it is impossible to judge of the relative abundance of the novelties enumerated. I have also included the captures of Mr. C. H. Peers, of Harrow-Weald Rectory, with Mr. Wall's and my own. Of the Rhopalocera, *Gonopteryx rhamni* was the first to put in an appearance on Feb. 19th, with *Vanessa urticæ* a few days later. On March 25th, a bright day with a cloudless sky, *Pieris brassicæ* and *P. rapæ* were about everywhere. *Euchloë cardamines* I did not see until April 23rd; but on May 6th, *Argynnis euphrosyne*, *Lycæna icarus*, *Polyommatus phlæas*, *Cænonympha pamphilus*, *Nisoniades tages*, and *Syrichthus malvæ* (the latter literally in thousands), were flying in the meadows about Pinner Woods. After May, the butterflies were not much in evidence, except *P. phlæas*, which was extremely plentiful, the last entry in my note-book showing that it was still about on Oct. 29th. *V. atalanta*, too, was out early, and continued to be common down to Oct. 21st, when it suddenly disappeared; but of *V. io* I saw but a solitary hibernated specimen on March 30th; while *V. cardui*, usually an occasional visitor, was in the same way entirely wanting. The discovery of this neighbourhood by the speculative builder will, I fear, soon destroy some of the best collecting-grounds in Middlesex, hitherto almost as much *terra incognita* to London entomologists as to the more unwelcome bricks and mortar. But there is still plenty of room for exploration; and, so far as I can judge, as I never meet collectors, the county has by no means received its fair share of attention. During August and September both Mr. Peers and I were away. Subjoined is a complete list of species observed, those followed by a \* being, I believe, additions to the already published lists of the county:—

*Rhopalocera* (15 species).—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Euchloë cardamines*, *Gonopteryx rhamni*, *Argynnis selene*, *Vanessa urticæ*, *V. io*, *V. atalanta*, *Epinephela ianira*, *Cænonympha pamphilus*, *Lycæna icaris*, *Syrichthus malvæ*, *Nisoniades tages*, *Hesperia sylvanus*.

*Heterocera* (195 species).—February: *Hybernia rupicaprararia*, *H. leucophæaria*. March: *Asphalia flavicornis*,\* *Tæniocampa gothica*, *T. incerta*,



*T. stabilis*, *T. gracilis*, *T. munda*, *T. pulverulenta*, *Gonoptera libatrix*, *Brephos parthenias*,\* *Amphidasys strataria*, *Hybernina marginaria*, *Anisopteryx æscularia*, *Cidaria suffumata*, *Alucita hexadactyla*. April: *Spilosoma fuliginosa*, *Xylocampa areola*, *Rumia luteolata*, *Selenia bilunaria*, *Panagra petrararia*, *Anticlea badiata*, *A. nigrofasciaria*, *Coremia unidentaria*. May: *Chœrocampa porcellus*, *Macroglossa stellatarum*, (Oct. 11th to 14th) *Euchelia jacobææ*, *Hepialus humuli*, *H. lupulinus*, *Procris statices*, *Spilosoma mendica*, *Acronycta psi*, *Leucania comma*, *Xylophasia rurea*, *Apamea basilinea*, *A. gemina*, *Miana strigilis*, *M. bicoloria*, *Grammesia trilinea*, *Caradrina taraxaci*, *Agrotis exclamationis*, *A. segetum*, *A. corticea*, *Noctua rubi*, *Hadena thalassina*, *Euclidia glyphica*, *E. mi*, *Heliaca tenebrata*, *Triphæna pronuba*, *Zanclognatha tarsipennalis*, *Hyphen proboscidalis*, *Selenia tetralunaria*, *S. lunaria*, *Venilia macularia*, *Odontopera bidentata*, *Tephrosia biundularia*,\* *Iodis lactearia*, *Cabera pusaria*, *C. exanthemata*, *Ligdia adustata*, *Lomaspilis marginata*, *Emmelesia albulata*, *E. decolorata*, *Eupithecia lariciata*, *E. centaureata*, *E. castigata*, *Thera variata*, *Melanthia ocellata*, *Melanippe sociata*, *M. montanata*, *M. fluctuata*, *Coremia designata*, *C. ferrugata*, *Campptogramma bilineata*, *Cidaria corylata*, *C. truncata*, *C. immanata*,\* *Eubolia plumbaria*, *Botys hyalinialis*. June: *Nola cucullatella*, *Spilosoma lubricipeda*, *S. menthastri*, *Zeuzera pyrina*, *Porthesia similis*, *Bombyx rubi*, *B. neustria*, *Notodonta camelina*, *Phalera bucephala*, *Thyatira derasa*, *Leucania conigera*, *L. pallens*, *Xylophasia lithoxylea*, *X. monoglyphia*, *X. hepatica*, *Neuria reticulata*, *Dipterygia pinastri*, *Mamestra brassicæ*, *Apamea didyma*, *Miana fasciuncula*, *M. literosa*, *M. arcuosa*, *Caradrina morpheus*, *Rusina tenebrosa*, *Noctua augur*, *N. plecta*, *N. triangulum*, *N. brunnea*, *N. festiva*, *Mania typica*, *Euplexia lucipara*, *Hadena oleracea*, *Plusia iota*, *P. pulchrina*, *P. gamma*. Oct. 21st: *Phytometra viridaria*, *Uropteryx sambucaria*, *Metrocampa margaritaria*, *Pericallia syringaria*, *Boarmia repandata*, *B. gemmaria*, *Pseudoterpna pruiata*, *Hemithea strigata*, *Acidalia bisetata*, *A. virgularia*, *A. aversata*, *Timandra amataria*, *Abraxas grossulariata*, *Larentia didymata*, *L. viridaria*, *Eupithecia rectangulara*, *Hypsipetes sordidata*, *Cidaria populata*,\* *C. fulvata*, *C. dotata*, *Eubolia limitata*, *Pyrallis glaucinalis*, *Eurrhyncha urticata*, *Botys fuscalis*, *Acipitilia pentadactyla*. July: *Orgyia antiqua*, *Hydrœcia nictitans*, *Leucania impura*, *Caradrina quadripunctata*, *Agrotis nigricans*, *Noctua baia*, *N. xanthographa*, *Amphipyra pyramidea*, *A. trogopogonis*, *Calymnia trapezina*, *C. diffinis*, *C. pyralina*, *Catocala nupta*, *Crocallis elinguararia*, *Geometra papilionaria*, *Phorodesma pustulata*, *Cidaria miata*, *Scotosia rhamnata*, *Aglossa pinguinialis*, *Pyrallis costalis*, *Achrœa grisella*. Aug.: *Asphalia diluta*, *Cerigo matura*, *Agrotis suffusa*, *Noctua c-nigrum*, *Xanthia fulvago*, *X. circellaris*, *Phylogophora meticulosa*, *Macaria liturata*, *Cidaria testata*. Sept.: *Neuronia popularis*, *Agrotis puta*, *Orthosia lota*, *O. macilentia*, *Anchocelis rufina*, *A. pistacina*, *A. lunosa*, *A. litura*, *Cerastis vaccinii*. (March 22nd) *Scopelosoma satellitia*, (Feb. 11th) *Xanthia citrigo*, *X. flavago*, *X. aurago*, *X. gilvago*, *Polia flavicincta*, *Miselia oxyacanthæ*, *Agriopis aprilina*, *Hadena protea*, *Epione apiciaria*. Oct.: *Calymnia affinis*, *Himera pennaria*, *Hybernina defoliaria*, *Oporabia dilutata*. Nov.: *Cerastis spadicea*, *Hybernina aurantiaria*, *Cheimatobia brumata*.—H. ROWLAND BROWN; Oxhey Grove, Harrow-Weald, Middlesex, Jan. 14th, 1894.

THE MILD SEASON.—I can give an earlier date for *Phigalia pedaria*, and from the North of Scotland, than any that have yet appeared in the

'Entomologist.' On Dec. 27th, my brother brought me a fine female specimen, which he had found in the Logie woods. He brought me another on Jan. 7th, from the same locality.—WM. REID; Pitcairle, N.B., March 5th, 1894.

On the 24th inst. my brother took a very good specimen of *Phlogophora meticulosa*, on some palings in the high road here. The moth was very lively when boxed. Can this be a hybernated specimen, or one of the early brood?—HERBERT C. GENTRY; 22, Goulton Road, Lower Clapton, N.E., Feb. 26th, 1894.

I found a male *Phigalia pilosaria* (*pedaria*), on Jan. 7th, on a lamp-post in Ealing.—R. S. ST. JOHN; Dunccliffe, Hanger Lane, Ealing, W., Feb. 27th, 1894.

I see in the 'Entomologist' for February (*ante*, p. 71) the report of an early capture of *Phigalia pedaria*. I had the pleasure of taking a specimen of this species, on a lamp in Sherwood Rise, on Jan. 13th. The weather was very mild then, and I have had *Endromis versicolor* and *Asphalia flavicornis* come out in the breeding-cage this week, which I think very unusual.—THOS. A. CARLYON; Connemara House, Alexander Street, Sherwood Rise, Nottingham, Feb. 17th, 1894.

LEPIDOPTERA AT LIGHT IN SUFFOLK IN 1893.—I was interested in reading the remarks on captures at light made last year by an Ipswich correspondent (*ante*, p. 26), and can fully endorse the statement as to the prevalence of *Noctua c-nigrum*, of which my first capture is recorded on May 8th. There was a noticeable decrease in the numbers of *Plusia gamma* as compared with 1892, and the same may be said of *Thyatira detersa* and *Triphæna pronuba*. The "glorious" evenings at ivy and willow last year might be called a fraud. Lamps at early morning, during May, were very productive, but after that time results were not so satisfactory, presumably owing to the increase of the feathered visitants, as I noticed numbers of swallows and other birds fly off the lamps on approaching. On May 13th, from 4.30 a.m., I captured the following:—*Smerinthus populi*, *Euchelia jacobææ* (6), *Pygæra bucephala* (2), *Orgyia pudibunda* (1), *Arctia lubricipeda* (2), *A. menthastri* (7), *Rumia cratagata* (2), *Hemerophila abruptaria*, and *Ciliæ spinula* (2). *E. jacobææ* came as a pleasant surprise, as I was not aware of its being attracted to light. On May 15th I caught another solitary specimen out of about seventy suburban lamps visited, other captures being chiefly *A. lubricipeda* and *A. menthastri*. On May 16th I added *Cymatophora diluta*. I may mention that I captured two specimens of *Biston hirtaria* on April 12th, and one example on Dec. 27th.—CLAUDE A. PYETT; Thornley Place, 28, Waterloo Road, Ipswich, Jan. 24th, 1894.

DRAGONFLIES IN THE CHESTER DISTRICT.—The three following species are now added to the list for the Chester district (Entom. xxvi. 35):—*Æschna cyanea*, one of the largest species, with two large yellow oval spots on front of thorax; *Platetrum depressum* (Entom. xxvi. 288); and *Calopteryx splendens*, with head, thorax, and body iridescent peacock-green, the males having on all the wings a very wide smoky black blotch, central, but situated nearest the outer margin, this blotch usually extending from the costal to the inner margin; females without the blotch, and wings usually with a green tint. Total, 17 species out of the British total of, say, 37.—J. ARKLE; Chester.



ARGYNNIS SELENE IN JERSEY.—On Aug. 19th, 1893, Mr. J. Norman, an entomologist of this island, had the good fortune to take a fritillary, afterwards identified by Mr. Luff, of Guernsey, as a small specimen of *Argynnis selene*. I was with him at the time of the capture, and saw the insect before he succeeded in netting it. It was flying over a bed of yellow iris, on the borders of a small stream in a valley at Rozel. This is an important capture, as *A. selene*, although common in England, had never before been observed in Jersey, or indeed any of the Channel Islands.—STANLEY GUITON; 31, Bath Street, Jersey.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 7th, 1894.* Henry John Elwes, Esq., F.L.S., President, in the chair. The President announced that he had nominated the Rt. Hon. Lord Walsingham, LL.D., F.R.S.; Professor Edward B. Poulton, M.A., F.R.S.; and Colonel Charles Swinhoe, M.A., F.L.S., Vice-Presidents of the Society for the session 1894-95. Mr. Walter F. Baker, of 18, Hyde Terrace, Leeds; Mr. Percy M. Bright, of Roccabruna, Bournemouth; Professor Lewis Compton Miall, F.R.S., of the Yorkshire College, Leeds; and Mr. Edwin Wilson, of Cherry Hinton Road, Cambridge, were elected Fellows of the Society. Mr. Jenner Weir exhibited, on behalf of Mr. J. M. Adye, a specimen of *Plusia moneta*, Fabr., which had been captured at Christchurch, Hants, and remarked that this species, which had been found in this country for the first time so recently as June, 1890, was apparently becoming a permanent resident here, as it had been since taken in several of the southern counties. The food-plant, *Aconitum napellus*, though rare in England as a wild plant, was very common in gardens. Mr. Jenner Weir also exhibited a nearly black specimen of *Venilia macularia*, L., the yellow markings being reduced to a few small dots. Mr. Hamilton Druce exhibited a female specimen of *Hypochrysops scintillans*, lately received by him from Mioko, New Ireland. He said that only the male of this species had been as yet described. Mr. F. Enock exhibited a nest of the British Trap-door Spider, *Atypus piceus*, recently found near Hastings by Mrs. Enock. Mr. W. F. H. Blandford stated that he had recently obtained an additional species of *Scolyto-platypus* from Japan, which, though closely allied to the species he had formerly described, showed a very distinct modification of the male prosternum. Mr. M. Jacoby exhibited and remarked on a specimen of *Leptispa pygmæa*, Baly, which was doing much injury to sugar-cane in the Bombay Presidency of India. Mr. G. C. Champion stated that he had found an allied species on bamboo. Dr. F. A. Dixey read a paper—which was illustrated by the oxyhydrogen lantern—entitled “On the Phylogeny of the *Pierinæ* as illustrated by their wing-markings and geographical distribution.” A long discussion ensued, in which the President, Mr. Osbert Salvin, Mr. Jacoby, Colonel Swinhoe, Mr. Jenner Weir, Mr. Hampson, and Mr. Kenrick took part. Dr. T. A. Chapman read a paper entitled “Some notes on those species of Micro-Lepidoptera, allied to *Micropteryx*, whose larvæ are external feeders, and chiefly on

the early stages of *Eriocephala calthella*." Mr. Hampson and the President made some remarks on the subject of the paper. Mr. Hamilton H. Druce read a paper entitled "Description of the female of *Hypochrysops scintillans*, Butl." The Rev. Dr. Walker communicated a paper by Mr. R. H. F. Rippon, entitled "Description of a variety of *Ornithoptera (Priamoptera) urvilliana*."

Feb. 28th.—Colonel Charles Swinhoe, M.A., F.L.S., Vice-President, in the chair. Professor August Forel, M.D., of the University of Zürich, was elected an Honorary Fellow of the Society, to fill the vacancy caused by the death of the late Professor H. A. Hagen, M.D. Mr. John Pratt, of the Cedars, New Barnet, and Mr. Michael Yeatman Woolf, of 1, Marlborough Place, St. John's Wood, N.W., were elected Fellows of the Society. Mr. G. C. Champion called attention to a supposed new Longicorn beetle, described and figured by Herr A. F. Nonfried, of Rakonitz, Bohemia, under the name of *Callipogon friedländeri*, in the Berl. Ent. Zeitschr. 1892, p. 22. He said that the supposed characters of the insect were due to the fact that the head had been gummed on upside down! He also exhibited an extensive collection of Coleoptera and Hemiptera-Heteroptera made by himself in the island of Corsica in May and June last. The Rev. Theodore Wood exhibited a variety of *Saturnia carpini*, with semi-transparent wings, a large proportion of the scales being apparently absent, bred with several examples of the type-form at Baldock, Herts; also a pale variety of *Smerinthus populi*, which was said to have been bred, with several similar specimens, from larvæ marked with rows of red spots on both sides. Mr. R. South exhibited a variety of *Argynnis aglaia*, approaching the form known as var. *charlotta*, and a variety of *Euchelia jacobæ*, in which the crimson costal streak was continued along the outer margin almost to the inner margin, taken by Mr. Fowler at Ringwood, Hants, in 1893; a variety of *Argynnis euphrosyne*, taken by Mr. Mead in Epping Forest in 1893; and a series of black and other forms of *Phigalia pedaria*, bred during the present year from a black female captured last year by Mr. Rose, of Barnsley. Mr. H. Goss exhibited, for Mr. C. B. Taylor, of Jamaica, a beautifully coloured drawing of the larva of *Papilio homerus*, Fab. Mr. F. W. Frohawk exhibited drawings showing the complete life-history of *Argynnis aglaia* and *A. adippe*, every stage being figured; also enlarged drawings of the segments of the larvæ in their first and last stages, showing the remarkable difference in structure. Mr. Merrifield commented on the beauty of the drawings. Mr. G. C. Champion read a paper entitled "On the *Tenebrionidæ* collected in Australia and Tasmania by Mr. J. J. Walker, R.N., during the voyage of H.M. Ship 'Penguin,' with descriptions of new genera and species"; and he exhibited the specimens comprised in the collection. Mr. J. J. Walker and Colonel Swinhoe made some remarks on the paper. Mr. Champion also read a paper entitled "An Entomological Excursion to Corsica," in which he described an expedition to the mountains of that island in May and June, 1893, in company with Mr. R. S. Standen, Mr. A. H. Jones, Colonel Yerbury, R.A., Mr. Lemann, Mr. Raine, and others. Mr. Osbert Salvin, Colonel Yerbury, and Colonel Swinhoe took part in the discussion which ensued. Mr. Edward Saunders communicated a paper entitled "A List of Hemiptera-Heteroptera collected by Mr.



Champion in Corsica, with a description of one new species." Mr. W. F. Kirby read a paper entitled "Notes on *Dorydium westwoodi*, Buchanan White, with observations on the use of the name *Dorydium*." Mr. Charles B. Taylor communicated a paper entitled "Description of the larva and pupa of *Papilio homerus*, Fab."

March 14th. — Colonel Charles Swinhoe, M.A., F.L.S., Vice-President, in the chair. Mr. William Bateson, M.A., Fellow of St. John's College, Cambridge; Mr. H. Caracciolo, of the Port of Spain, Trinidad; Mr. G. Dudgeon, of 53, Montague Square, W.; and the Rev. Frank E. Lowe, M.A., of St. Stephen's Vicarage, Guernsey, were elected Fellows of the Society. Dr. D. Sharp, exhibited a collection of white ants (*Termites*) formed by Mr. G. D. Haviland in Singapore, which comprised about ten or twelve species, of most of which the various forms were obtained. He said that Professor Grassi had recently made observations on the European species, and had brought to light some important particulars; and also that, in the discussion that had been recently carried on between Mr. Herbert Spencer and Professor Weismann, the former had stated that in his opinion the different forms of social insects were produced by nutrition. Professor Grassi's observations showed this view to be correct, and the specimens now exhibited confirmed one of the most important points in his observations. Dr. Sharp also stated that Mr. Haviland found in one nest eleven neoteric queens,—that is to say, individuals having the appearance of the queen in some respects, while in others they are still immature; these neoteric queens were accompanied by kings in a corresponding state. Mr. Haviland gave an account of the structure of some of the nests, and of the cells of the females, and stated that two of the species of white ants exhibited certainly grow fungus for their use, as described by Mr. Smeathman, many years ago, in the Phil. Trans. of the Royal Society. Mr. H. Goss remarked that the fact that the different forms of social insects were produced by nutrition was known to Virgil, who referred to it, and to the subject of Parthenogenesis in bees, in the 'Georgics,' Book iv. Mr. McLachlan, Colonel Swinhoe, Mr. Champion, Mr. Jenner Weir, and Dr. Sharp continued the discussion. Mr. O. E. Janson exhibited specimens of *Dicrancephalus adamsi*, Pascoe, from Sze-chuen, Western China, and *D. dabryi*, Auz., recently received from the neighbourhood of Moupin, in the same district; he observed that, although the latter had been quoted by Lucas, Bates, and others, as a synonym of *adamsi*, the two species were perfectly distinct; the females of both were unknown to the authors when describing them, and presented a remarkable difference, for whilst in *dabryi* this sex is similar to the male in colour and sculpture, in *adamsi* it is entirely dull black, with the upper surface minutely and densely punctate. Mr. C. O. Waterhouse exhibited, for Mr. E. A. Waterhouse, a specimen of *Colias edusa*, closely resembling *C. erate*, a continental species, which was taken on Wimbledon Common; a varied series of *Chrysophanus phlaeas* from Barnes Common; and a series of *Lycana arion*, from Cornwall. The Rev. Canon Fowler read a paper entitled "Some new species of *Membracidae*." Mr. F. Merrifield read a paper entitled "Temperature experiments in 1893, on several species of *Vanessa* and other *Lepidoptera*." He said that the results tended to confirm Dr. Dixey's conclusions as to the origin of the

wing-markings in the *Nymphalidæ*, brought out many, presumably, ancestral features, and in some cases were very striking. There was much difference in sensitiveness between the seasonal broods of the same species, even in *V. c-album*, although both broods of that species passed the pupal state in the warmer part of the year. Dr. F. A. Dixey read a paper entitled "On Mr. Merrifield's experiments in temperature-variation as bearing on theories of heredity," which was supplemental to the previous paper. Colonel Swinhoe, Mr. Hampson, Mr. Jenner Weir, Mr. Merrifield, and Dr. Dixey took part in the discussion which ensued.—H. GOSS & W. W. FOWLER, *Hon. Secretaries*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Annual Meeting, January 25th, 1894.* J. Jenner Weir, Esq., F.L.S., President, in the chair. This being the Annual Meeting, no exhibits were made, the occasion being devoted to hearing the Treasurer's and Council's Reports and the Address of the retiring President. The President presented a handsome album to the Society, containing three photographs of himself, taken at different ages, and said he hoped that all the members would contribute their own, as such a collection would, in the future, probably be of great interest and value. The following gentlemen were then elected officers for the ensuing year:—President, Mr. E. Step; Vice-Presidents, Mr. J. Jenner Weir, F.L.S., and Mr. C. G. Barrett, F.E.S.; Treasurer, Mr. R. Adkin, F.E.S.; Librarian and Report Secretary, Mr. Hy. J. Turner, F.E.S.; General Secretary, Mr. S. Edwards, F.L.S.; Curator, Mr. W. West; Council, Messrs. T. R. Billups, F.E.S., C. A. Briggs, F.E.S., J. H. Carpenter, F.E. Filer, F. W. Frohawk, F.E.S., J. Henderson, and R. South, F.E.S. In his address the President showed fully the pleasures and advantages derived from the study of entomology. He spoke of the recent attention which had been given to classification, noticing especially the admirable work of Dr. Chapman, and made considerable reference to melanism, coupling therewith the results of the laborious experiments of Mr. Merrifield. After discussing at length the exceptional season and its effects on Lepidoptera, he remarked with satisfaction upon the "new life which the study of Variation had given to the collecting of indigenous Lepidoptera." A graceful reference to the late Mr. H. T. Stainton, as one who, "being dead, yet speaketh," and words of welcome to the incoming President, Mr. E. Step, ended a most able address.

*February 8th.*—E. Step, Esq., President, in the chair. Mr. Carpenter exhibited *Xylophasia monoglypha*, Hufn. (*polyodon*, L.), both the dark and intermediate forms; also a form of *Agrotis cursoria*, Bork., not distinguishable from a southern form of *A. tritici*; all from Aberdeen. Mr. W. F. Warne, a case of nearly two dozen species of Rhopalocera taken near Rockhampton, in Queensland, representing one morning's captures; they included *Anosia plexippus* and *Deiopeia pulchella*, L. Mr. W. A. Pearce, series taken by himself in Alleghany, U.S.A., during 1892–3, *Pyrameis atalanta*, L., *P. huntera*, Fab., *Vanessa antiopa*, L., *Polygonia interrogationis*, Fab., *P. comma*, Harr. (the two broods), and bred series of *Telea polyphemus*, L., and *Samia cecropia*, L. A discussion ensued as to the singularity of a species like *V. antiopa* being gregarious in the larval stage, while the imagines were seldom met



with in company. Mr. R. Adkin, examples of *Crambus ericellus*, Hb., *C. dumetellus*, Hb., *C. pratellus*, L., *C. myellus*, Hb., *C. pinellus*, L., *C. furcatellus*, Zett., and *C. margaritellus*, Hb., and pointed out characters by which the closely allied species might be easily separated. Mr. Dennis, a specimen of *Vanessa io*, L., with a small additional ocellus on each secondary, while below the central costal blotch on the primaries was a smaller dark blotch. Mr. H. Williams, specimens of *Pieris brassicae*, L., curiously tinted from contact with liquid ammonia. Mr. J. Jenner Weir, on behalf of Mr. Adye, a specimen of *Plusia moneta*, taken at Christchurch in 1893, and a nearly black specimen of *Venilia macularia*, L., from the New Forest; also, on behalf of himself, *Eucheira socialis*, Westw., perhaps the most archaic form of the Pierine sub-family extant, and contributed notes. Mr. Frohawk, a bred series of *Argynnis euphrosyne*, L., which has been nearly eleven months in the larval stage. Mr. Billups, on behalf of Mr. Sauzé, a large number of Diptera captured in 1893.

February 22nd.—The President in the chair. Mr. South, for Mr. Rose, of Barnsley, exhibited a long bred series of *Phigalia pedaria*, Fb., some being uniformly black without a trace of markings; for Mr. Fowler, of Ringwood, a beautiful variety of *Argynnis aglaia* which was a modification of the form known as *charlotta*, Sowerby; and a var. of *Euchelia jacobææ*, L., having the costal stripe carried round the hind margin to meet the spot; for Mr. Dennis, of York, photographs of very long series of *Spilosoma lubricipeda*, Esp., ranging from very pale and almost spotless to very deep coloration; and a photograph of three other vars. from the Allis collection, from York, of which two were undoubtedly of the *zatima* form, although not extremes; also several rare vars. of *Argynnis euphrosyne*, L. Mr. Frohawk, coloured drawings representing the complete life-history of both *A. aglaia*, L., and *A. adippe*, L., with details enlarged to show the remarkable larval structure. Mr. Warne, an asymmetrical specimen of *Abraxas grossulariata*, L. Mr. Moore, several cases of all orders, containing specimens collected on a bicycle tour from Dieppe through Paris, Cote d'Or, and Jura to Geneva, and in Guienne, and contributed notes. Mr. Pearce, series of *Fenisea tarquinius*, Fab., spring and summer broods of *Lycana pseudargiolus*, Bd., *L. comyntas*, Godt., and *Thecla edwardsii*, Saund., from Pennsylvania, U.S.A. Mr. Auld, for Mr. Tugwell, to correct an error in the report of Jan. 11th; series of the York city form of *Spilosoma lubricipeda*, Esp., for which he suggests the name var. *eboraci*; series of var. *zatima*, Cr.; and series of the selected brood originating from Yorkshire, for which he suggests the name var. *fasciata* [ante, p. 96]. A discussion ensued as to variation produced by artificial selection. Mr. Jenner Weir exhibited a new butterfly from North Eastern Borneo, which he had described under the name of *Caduga crowleyi* [ante, p. 109]. Mr. Lewcock sent for exhibition a box of Coleoptera to illustrate a paper he communicated, describing his observations during the various excursions of the Society. Mr. Mansbridge communicated a paper containing his observations in the United States, entitled "Notes from the Indian Territory." Remarks were made on the increase of melanism in insects, and a discussion ensued.

March 8th.—The President in the chair. Mr. R. Adkin exhibited a series of *Erebia epiphron*, Knoch. var. *cassiope*, Fb., from Inverness, which were said to be of the type form (*epiphron*); he had, however, failed to detect the white pupil to the ocellated spots, which was the typical character. Mr. Weir said that the British form had no trace of the white pupil. Mr. Routledge, specimens of a brood of *Selenia bilunaria*, Esp., which had lain over the summer of 1892, emerging in April, 1893; also individuals bred from a pair of the latter, which had emerged at intervals from Aug., 1893, to Feb., 1894, and were all of the small form, although some had the pigment well developed; he also brought a series of *Epunda lutulenta*, Bork., captured in Cumberland, among which were both the var. *sedii*, Gn., and the var. *luneburgensis*, Frr. Mr. South, exceedingly large female specimens of *Ocnieria dispar*, L., bred upwards of thirty years ago from larvæ obtained in the fens; he thought these specimens had originally belonged to the late Mr. Standish, and Mr. Weir said that they agreed in the setting with examples in his own collection which he had received from Mr. Standish. Mr. Frohawk, a third brood of *Pararge megara*, L., ten males and ten females, bred by himself from ova deposited on Aug. 2nd, 1893. Mr. Billups, three species of rare Ichneumonidæ, viz., *Microgaster russatus*, Hal., taken at High Beech in 1884; *Hyperacmus crassicornis*, Gr., of which only one recorded specimen was known, taken at Oxshot in 1892; and *Euryproctus nemoralis*, Fov., taken at the same place last July. Mr. Filer, a series of *Hybernina leucophæaria*, Schiff., taken at Richmond and Epping, among which were some exceptionally dark forms. Mr. W. A. Pearce, specimens of *Attacus luna*, L., and *Citheronia regalis*, F., from Wilkinsburg, U.S.A. Mr. Jenner Weir, male and female *Heteronympha merope*, Fab., and stated that the sexes were so totally unlike as to be deemed different species until quite recently; he also said that the chrysalis was said to be contained in a frail network on the ground. Mr. Auld, on behalf of Dr. Knaggs, a working model of the decoy and net described in the 'Entomologist,' 1893, and a considerable discussion ensued. Mr. Step stated that he had found that the flowers of the butcher's broom (*Ruscus aculeatus*, L.), were produced in pairs on the phylloclade, but only one bud opened at a time.—HY. J. TURNER, *Hon. Report Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—January 15th, 1894. Mr. R. C. Bradley in the chair. Exhibits:—By Mr. G. T. Bethune Baker, *Agrotis ravida* from Wicken, and three specimens of *Tapinostola extrema*, Hb. (*concolor*, Gn.), taken near Wicken by Albert Houghton; also a collection of Lepidoptera received from Alexandria; he said that the species showed a mingling of Mediterranean with Indo-Persic forms; there were no true Ethiopian forms amongst them; twenty-two of the species were new to science, and it was perhaps the largest collection yet received from Egypt. By Mr. Bradley, specimens of *Andrena fulva* and *A. cineraria*, which had been dug out of nests at Sutton by railway men on Dec. 28th, a date when they should have been in pupæ; he had communicated with Mr. Saunders, who said that the only similar case of which he knew was that Mr. Enock had dug up an *Andrena*, with a parasitic *Nomada*, once in December.



*February 5th.*—*Annual Meeting.* Mr. R. C. Bradley in the chair. Mr. W. Bowater, of Portland Road, Edgbaston, was elected a member. Reports of the Treasurer and Council were presented, the former showing a small balance in hand. The officers and council for 1894–5 were elected as follows:—President, Mr. G. H. Kenrick; Vice-President, Mr. G. T. Bethune Baker; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. H. Martineau; Hon. Secretary, Mr. Colbran J. Wainwright, 147, Hall Road, Handsworth; and remaining members of Council, Messrs. P. W. Abbott and W. Harrison. Exhibits:—By Mr. P. W. Abbott, a short series of *Acidalia humiliata* from the Isle of Wight, one of which he took in 1891, the remainder being sent to him by Mr. A. J. Hodges; also *Caradrina superstes* from Guernsey; he said that a specimen of this species had been taken at Sandown, Isle of Wight, last autumn, by Mr. Prout; also *Hadena dentina* from Sutton and Isle of Wight, the former a particularly dark specimen, the latter a chalk-cliff form, very pale and quite unlike the dark one in appearance; also a specimen of *Lobophora viretata* from Sutton, very small and pale, without the median bands; and other interesting insects. By Mr. A. H. Martineau, workers of *Myrmica rufa* and *M. sanguinea*; of the latter rare ant he had found a nest in Wyre Forest. By Mr. R. C. Bradley, *Gonia lateralis* from Trench Woods. By Mr. W. Harrison, *Lycæna argiolus* and *Halias prasinana* from Frankley, near Harborne, &c.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*February 12th*, 1894. Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Miss E. H. Lea, Kirby Park, West Kirby, and Mr. Frederick Rose, 64, Mount Pleasant, Liverpool, were elected ordinary members of the Society. Mr. Robert Newstead read a paper entitled “Correlations of Plants and Insects,” in which he discussed the fertilisation of the *Yucca*, and explained the process as described by Prof. C. V. Riley in ‘Insect Life,’ and added notes from his own observations on the insects frequenting the flowers in this country. He also gave notes on the gall-making Brachyseelidæ of Australia, a group of Coccidæ peculiar to that country. He also called attention to the galls of *Diplosis rumicis*, Linn., and suggested that it is quite possible botanists have described malformed “tubercles” of some species of *Rumex*, as he had found a great number of “tubercles” abnormally swollen by this species. The paper was illustrated by diagrams and specimens, including a specimen of gall-making coccids from Australia.

*March 12th.*—The President in the chair. Mr. W. E. Sharp gave a brief description of the British species of the genus *Silpha*, particularly those of local occurrence, in the course of which he quoted an extract from the ‘Transactions’ of the Société de Biologie de Paris by Prof. A. Giard on *Silpha opaca*, an insect most destructive to the French beet-root crops. The notes were illustrated by specimens of the genus. Miss E. H. Lea exhibited varieties of *Cidaria psitticata* and *C. miata*; Mr. John Lea, large specimens of *Cidaria sagittata*; Mr. John Watson exhibited *Meganostoma casonia*, *Catopsilia crocea*, *Colias vautieri*, and *C. fieldii*.—F. N. PIERCE, *Hon. Sec.*

READING NATURAL HISTORY SOCIETY.—The usual monthly meeting of this Society was held on Thursday, Feb. 1st, at 8 p.m., in Mr.

Robert Hewett's room, St. Mary's Churchyard. No paper was read, but a variety of interesting Natural History specimens were exhibited, among which were the series of varieties, about fifty in number, of *Arctia caia*, shown by Mr. W. E. Butler, and a drawer of Micro-Lepidoptera, beautifully mounted, by Mr. A. H. Hamm.—FRED. W. LESLIE, *Hon. Sec.*

## RECENT LITERATURE.

*The Butterflies and Moths of Teneriffe.* By A. E. HOLT WHITE. Edited by RASHLEIGH HOLT WHITE, Vice-President of the Selborne Society. Illustrated from the Author's drawings. London L. Reeve & Co. 1894 [Dec. 19, 1893].

MRS. HOLT WHITE has rendered a real service to entomologists, as well as to tourists or invalids interested in insects, who may visit the Canary Islands, in publishing a fairly complete and reliable, though popular, account of the Macro-Lepidoptera of Teneriffe, most of which are illustrated on the four plates which accompany this volume; for the fauna is very limited. The introductory observations on collecting, rearing, &c., are useful, and the transformations of the various species are noticed, as far as they have been observed. Several species are figured in this book for the first time, and a detailed account is given of the interesting and little-known Arctiid, *Rhyporioides rufescens*, Brullé, which is peculiar to the Canaries, in all its stages.

The Atlantic islands are very poor in Lepidoptera, and much remains to complete our knowledge on the subject, especially in the Micro-Lepidoptera, notwithstanding Rebel's recent paper in the 'Annalen d. k.k. naturhist. Hofmuseums,' vii., pp. 241-284, pl. xvii. The most complete lists are as follows:—

	Macros.	Micros.	Total.
Azores (Godman) . . . . .	23	5	28
(Nat. Hist. Azores; 1870.)			
Madeira (Bethune-Baker) . . . . .	70	—	70
(Trans. Ent. Soc. 1891.)			
Canaries (Holt White & Rebel) . . . . .	64	63	127
St. Helena (Mrs. Wollaston) . . . . .	30	64	94
(Annals and Mag. of Nat. Hist., ser. 5, vol. 3; 1879.)			

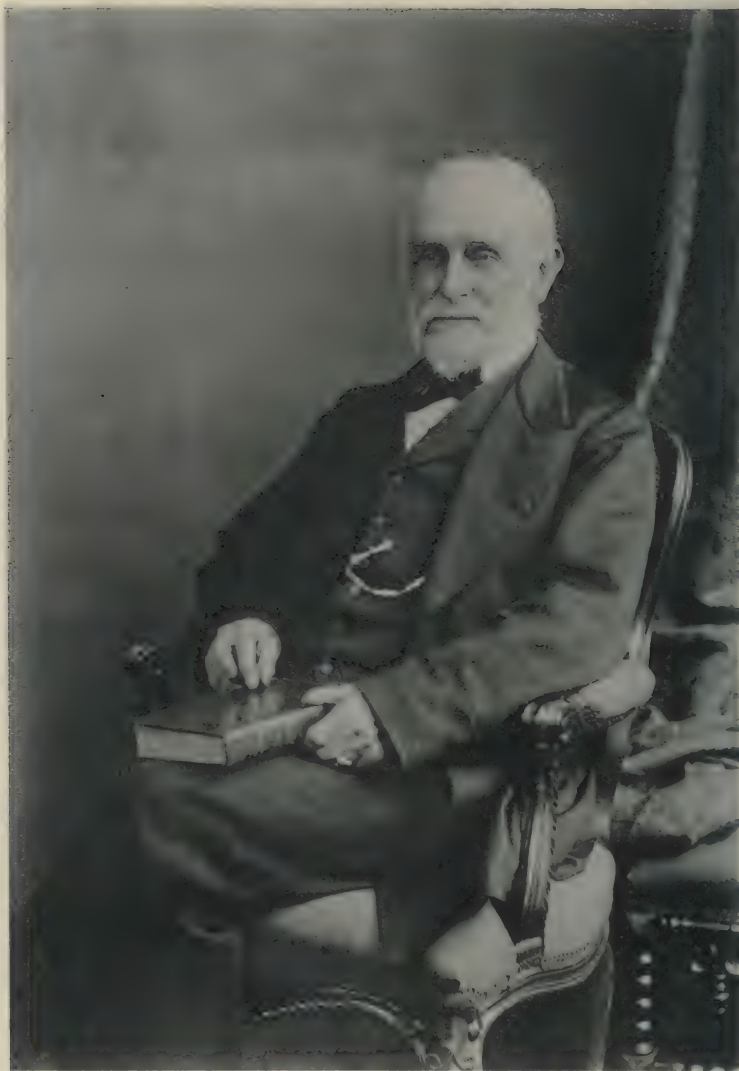
We have thought it useful to give a comparative table of the Macro-Lepidoptera (inclusive of Deltoides and Geometridæ, but not Pyralidæ) of the three first groups of islands. St. Helena lies so much further to the south, and so many of its species are probably endemic, that it must be regarded as belonging to a totally different fauna; but in our table we have marked any species likewise found in that island with an asterisk. The only butterfly of the four found in St. Helena not in our table is *Hypolimnas misippus*, and it is this butterfly, and not *Danaüs chrysippus*, which is found in America in the localities assigned by Mrs. Wollaston to the latter butterfly. Only three Sphinges are recorded from St. Helena, and no Bombyces; indeed the scarcity of Bombyces in all the Atlantic islands is specially remarkable.



	Azores	Ma- deira	Ca- naries		Azores	Ma- deira	Ca- naries
<b>RHOPALOCERA (Butterflies).</b>				<i>Hecatera maderæ</i> .	+		
<i>Pieris brassicæ</i> .	+			<i>Epunda albosignata</i> .	+		
<i>wollastoni</i> .		+	+	<i>Hadena atlanticum</i> .	+		
<i>cheiranthi</i> .			+	<i>Eriopus latreillii</i> .	+		
<i>rapæ</i> .	+		+	* <i>Prodenia littoralis</i> .	+		+
<i>napi</i> .	+			<i>Phlogophora periculosa</i>	+		
<i>daplidice</i> .	+		+	<i>v. brunnea</i>	+		
<i>Aporia cratægi</i> .			+	<i>wollastoni</i>	+		
<i>Euchloe charlonia</i> .			+	<i>Nyssocnemis dubiosa</i> .	+		
<i>Rhodocera maderensis</i>		+		<i>Nonagria sacchari</i> .	+		+
<i>cleobule</i> .				* <i>Leucania extranea</i> .	+		+
<i>Colias edusa</i> .	+	+	+	<i>Caradrina quadripunctata</i>	+		
<i>v. helice</i> .		+	+	<i>exigua</i>	+		
<i>Danaïs archippus</i> .	+		+	<i>Calymnia (?) ferruginea</i>	+		+
* <i>chrysippus</i> .			+	<i>Calocampa exoleta</i> .			+
<i>v. alcippoides</i> .			+	<i>Cucullia chamomillæ</i> .		+	
<i>v. klugii</i> .			+	* <i>Plusia aurifera</i> .	+		+
<i>Argynnis maia</i> .			+	<i>chalcitis</i> .	+		
<i>lathonia</i> .		+	+	<i>gamma</i> .	+		
<i>Pyrameis atalanta</i> .	+	+	+	<i>chrysitis</i> .		?	(Webb)
<i>callirhoe</i> .		+	+	<i>circumflexa</i> .		+	+
* <i>cardui</i> .	+	+	+	<i>eriosoma</i> .			+
<i>huntera</i> .			+	<i>tripartita</i> .			+
<i>Pararge xiphia</i> .		+		<i>Heliothis armiger</i> .	+	+	+
<i>xiphioides</i> .			+	<i>peltiger</i> .	+	+	+
<i>Epinephele janira</i> .	+			<i>dipsacea</i> .		+	+
<i>v. hispulla</i>			+	<i>Heliaca tenebrata</i> .		+	+
* <i>Hipparchia statilinus</i> .	(?)		+	<i>Arontia lucida</i> .		+	+
<i>maderensis</i>		+		<i>Thalpochares ostrina</i> .	+		
<i>Thecla rubi</i> .			+	<i>v. æstivalis</i>	+		+
<i>Polyommatus phloæa</i> .		+	+	(? ) <i>Cosmophila erosa</i> .			+
* <i>Lycæna bætica</i> .		+	+	* <i>Pseudophia tirhaca</i> .			+
<i>webbiana</i> .			+	<i>Spintherops dilucida</i> .		+	
<i>astrarche</i> .				<i>Hypena lividalis</i> .		+	+
<i>var. æstiva</i> .			+	<i>obsitalis</i> .	+		+
<i>bysimon</i> .			+	* <i>Hypenodes costæstrigalis</i>	+		
<i>Hesperia actæon</i> .			+				
<b>HETEROCEA (Moths).</b>				<i>Geometræ.</i>			
<i>Sphinges.</i>				<i>Nemoria nubigena</i> .	+		
<i>Macroglossa stellatarum</i> .	+	+	+	<i>Acidalia maderæ</i> .	+		
* <i>Chœrocampa celerio</i> .			+	<i>dimidiata</i> .	+		
<i>Daphnis nerii</i> .	+			<i>atlantica</i> .	+		
<i>Deilephila livornica</i>		+		<i>unistrigata</i> .	+		
<i>lineata</i> .			?	<i>zargi</i> .	+		
<i>tithymali</i> .		?	+	<i>wollastoni</i> .	+		
<i>lathyrus</i> .		?		<i>irrorata</i> .	+		
<i>Sphinx ligustri</i> .	+	?	(Webb)	<i>consolidata</i> .			+
<i>convolvuli</i> .	+	+	+	<i>guancharia</i> .			+
<i>v. botatæ</i> .			+	<i>Zonosoma pupillaria</i> .	+		+
* <i>Acherontia atropos</i> .	+	+		<i>maderensis</i>	+		
<i>Bombyces.</i>				<i>Hemerophila maderæ</i> .	+		
<i>Deiopeia pulchella</i> .		+	+	<i>Boarmia wollastoni</i> .	+		
<i>Rhyparioides rufescens</i>			+	<i>var. obscura</i> .	+		
<i>Dasychira fortunata</i> .			+	<i>Tephronia sepiaria</i> .			+
<i>Noctuæ.</i>				<i>Eubolia rupicola</i> .	+		
<i>Bryophila ravula</i> .			+	<i>Aspilates collinaria</i> .			+
<i>algæ</i> .			+	* <i>Sterrhæ sacraria</i> .	+		+
<i>maderensis</i>		+		<i>Omphacodes divincta</i> .			+
<i>Sesamia nonagrioides</i>		+	+	<i>Camptogramma fluviata</i> +			
<i>Triphæna pronuba</i> .		+	+	<i>Phibalap. polygrammata</i> +			
<i>orbona</i> .			?	<i>Coremia centrostrigaria</i>		+	
<i>Agrotis spinifera</i> .		+	+	<i>Cidaria fasciata</i> .		+	
<i>saucia</i> .	+	+	+	<i>Eupithecia pumilata</i> .			+
(? ) <i>segetum</i> .	+			<i>insulariata</i>	+		
				<i>bicoloria</i> .	+		
				<i>Centra stregaria</i> .			+







*From a photograph by Maull & Fox, Piccadilly, W.*

*Yours very truly*  
*James Wren*

# THE ENTOMOLOGIST

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THE LATE MR. JOHN JENNER WEIR, F.L.S., F.Z.S.,  
F.E.S., & F.R.H.S.

MANY of our readers must have been pained by the brief announcement made in our last issue of the death of this gentleman, and will, we are sure, gladly receive some particulars of the interesting and well-filled life that, after so brief a warning, has come to a close. Mr. Jenner Weir was born at Lewes on the 9th of August, 1822. Like many who have done much valuable work in Natural History, it was only in his leisure hours that he could pursue the study, other avocations engrossing the principal part of his time. In 1839 he entered the Customs service, and passed on through various stages, until in 1874 he was made Accountant and Controller-General of H.M.'s Customs, London. The estimation in which he was held may be gathered from the comment made by the 'Civil Service Review' of August 22nd of that year, in announcing his appointments: "It is believed that this is one of those rare instances in which promotion gives universal satisfaction." In August, 1885, he retired from the Civil Service.

Mr. Jenner Weir's interest in Entomology did not begin at so early an age as it has often done with many others; at least he did not take it up as a study until the summer of 1843. His first public communication on the subject was to the 'Zoologist,' dated the 14th June, 1845, on the capture of *Ino (Procris) globularia*, *Agrotis cinerea*, and *Crambus pygmaeus* (= *Platytes cerussellus*) at Lewes. Late in 1844 he attended a meeting of the Entomological Society for the first time; and in January, 1845, he was elected a Member, which he continued to be for the remainder of his life, a period of nearly fifty years, being at his death almost its oldest member. For many years Mr. Jenner Weir worked assiduously at the Micro-Lepidoptera; but in 1870 an accident, which resulted in the loss of the top of the left thumb, put an end to the setting of these insects.



The bent of his mind was always towards the solving of questions of general biological interest, and especially such as bore on the mutual relations of the many diverse forms of life in which he was interested; and he was one of the earliest to appreciate the advantages of the direct experimentation which now engages the attention of a distinct school of entomologists, besides entering largely into the work of many others. This was shown in the first paper he ever read before the Entomological Society, on March 1st, 1869, in which he described a series of experiments on the relation between insects and insectivorous birds, undertaken during the year 1868, at the suggestion of Dr. A. R. Wallace. A further paper on the same subject was read by him on July 4th, 1870. From 1849, Mr. Jenner Weir was often a member of the Council of the Society, of which he was for seven years Treasurer and twice a Vice-President.

He was elected a Fellow of the Linnean Society of London on March 2nd, 1865, and a Fellow of the Zoological Society in 1876, and was at the time of his death a member of the Finance Committee of that Society. In 1894 he became a Fellow of the Royal Horticultural Society, and was at his death a member of its Scientific Committee and of its Narcissus Committee. Of the Ray Society he was a member from 1866, and for twenty years or more was on the Council of that Society, frequently taking the chair at its meetings. For several years he was President or Vice-President of the South London Entomological Society, and he delivered his last Presidential address there on January 25th, 1894. Of the West Kent Natural History Society he was a member and its President.

Mr. Jenner Weir carried on an extensive correspondence with the late Mr. Darwin, and frequent reference is made to his observations in the works of that great naturalist,—in both volumes of his ‘Descent of Man,’ and of the ‘Animals and Plants under Domestication,’ as well as in the ‘Expressions of the Emotions.’ He had a large correspondence with many other naturalists of eminence, both at home and abroad; and it was a great pleasure to him to welcome on his recent visit to England the distinguished American naturalist Mr. Scudder.

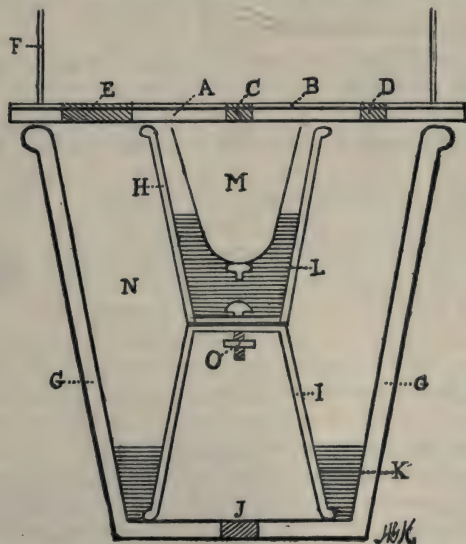
Mr. Weir was present at the meeting of the South London Entomological Society on March 8th, and took a considerable part in the discussion there, besides exhibiting some specimens. It was on this occasion that he handed to the editor of this Journal the proof of his paper on “The Genera of Limnaine Rhopalocera allied to *Caduga*,” published in our last number. He appeared then to be in his usual health, and was much interested in Mr. Frohawk’s drawing of his new *Caduga*, with which the paper is illustrated. It was known, however, to himself and his friends that his heart was affected, and the end came after a very brief illness.

His life was a fine example of a useful, peaceful, and happy one. His important official duties yet left him sufficient time to indulge that love of nature of which he has himself said that it was all his life a passion with him; and after his retirement from the public service this passion, combined with a wide range of information on different subjects, including a most intelligent interest in many things outside the reach of his own studies, an equable temper, thorough enjoyment of home, not excepting its study, well stored with delightful books of reference, and its garden distinguished by many beautiful flowers and some pet birds,—all these rendered the last part of his life by no means the least happy part of it. To his friends he was a most agreeable companion, and the help and encouragement he was always ready to give to younger students of Natural History will ensure him for a long time to come a grateful place in the memory of those who participate in the tastes that had such a fascination for him, while by a much wider circle his loss will be deeply mourned.

### A DARK CHAMBER FOR LARVÆ.

By H. GUARD KNAGGS, M.D., F.L.S.

Now that the season for breeding Lepidoptera is coming on, some instructions, accompanied by cuts, showing how easily a dark chamber can be constructed, may not be out of place; and

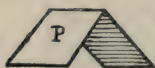
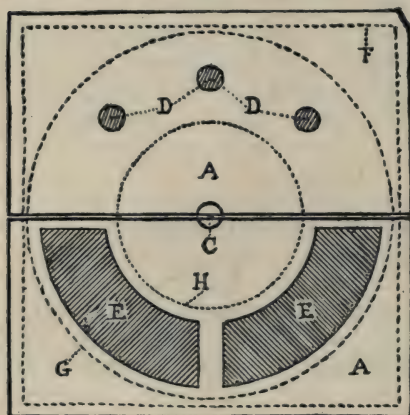


a few details as to the various uses to which the apparatus may be put have been added.



The first, sectional, figure explains how two small flower-pots, H and I, are secured base to base by means of a bolt and nut, O, and how they are fixed within a larger flower-pot, G, with Portland cement, K, the rims of H and G having been first ground or rasped level, that the slate A may lie upon them evenly. A bowl of a wine-glass, M, or other vessel for containing water, is then embedded into cement L, in the pot H, in such a manner that it is afterwards removable. The space N, between the pots H, I, and G, is for the reception of soil, or such other materials as occasion may require.

The slate A (also represented in the second figure by corresponding letters to prevent repetition) is covered with felt or



canvas, B, and is perforated by drill and rhynder at D D, or sawn out as at E E. The dotted circles H and G indicate the position beneath of the flower-pots; whilst the dotted square, F, shows that of the breeding-cage above. For most purposes the holes D D, of about five-eighths of an inch in diameter, will be found best adapted; for the largest larvæ readily find their way down them to the chamber, which is darker, and better suited for a hiding-place than when the openings are larger, and, what is of greater importance, these

openings can be roofed over with movable pieces of card or tin, bent as at P, to prevent frass from falling amongst the soil, &c., and causing an unsanitary state of things.

There are many purposes for which the space N may be used; for instance, it may be filled with eight or nine inches depth of sand for *A. ripæ* and other Agrotæ which love to burrow; for butterfly and many other larvæ, sods or turfs may be substituted; or again, according to the inmates of the cage, bark, rotten wood, broken reeds, short pieces of bamboo, dead leaves, &c., may be supplied; for the habits of many larvæ are to secrete themselves in a state of nature, and these do not seem to thrive if deprived of their places of concealment.

For hibernating larvæ a little modification of the chamber is required: the pot G and contents should be sunk in the earth in a north-east aspect, the water-vessel should be discarded, and the centre hole plugged with the stalks of such evergreens as laurestinus, aucuba, ivy, euonymus, &c., with a few spikes of

plantain-seeds, and perhaps a piece of potato and carrot on the slate. If a bell-glass be not substituted for the ordinary cage, an umbrella-like arrangement should protect the latter from rain and snow, while the interior, *n*, should be loosely filled with a selection from the materials already named.

For *subterranean pupation* this chamber is especially adapted, and for this purpose it should be stocked with a soil resembling that which the occupants of the cage inhabit in their native haunts, as peat, sand, loam, chalk, maiden earth, leaf mould, fir mould, as the case may be. Great care should of course be taken to eject and exclude vermin; the soil should reach to within about an inch of the slate, and be covered with a thin layer of cocoa-nut fibre, rubbed birch catkins, or prepared moss. Provided the soil is suitable, this chamber may be used several times over for batches of different species as they become ready for pupation. When we consider that a sufficient number have gone to earth, the slate with the larger openings, *EE*, may be exchanged for the one with perforations, *DD*, care being taken to stop all chinks and crevices, that no enemy may gain admittance to the interior; or, if preferred, the stage and cage may be discarded altogether for a cylinder of muslin, of close texture, made on a wire frame, and tied tightly under the rim of the pot *G*. There is no ingress for vermin below, and few, if any, can do harm through the book muslin, which affords a good foothold for the insects as they emerge, acts as a shade against too powerful sunshine, and is sufficiently transparent to permit of a view of the interior.

N.B.—If mice, or other creatures which might gnaw the muslin, are in evidence, it would be as well to place lightly on the soil a framework, to which the imagoes on making their appearance could cling, and cover the whole with a suitable bell-glass, bedded in plaster on to the rim of the pot *G*, in order to exclude intruders.

Unless there is reason to fear that mischief is going on, it is never advisable to move the earth containing the pupæ; but if the soil should at any time appear too dry, sufficient moisture may be administered through the porous sides of the dark chamber.

Folkestone, April 7th, 1894.

## ON A HABIT OF *EROS (PLATYCIS) MINUTUS*, F.

By W. L. DISTANT.

In the February number of this Magazine (p. 33) Mr. Shipp has recorded his discovery of a colony of *P. minutus* in Gloucestershire, and in describing the habits of the species truly remarks,



"The insects themselves are of a very sluggish disposition, rarely moving more than a few inches during the heat of the day," &c. One hint may, however, be added to this item, and one that may prove useful to the collector, but to state this necessitates taking up the narrative of Mr. Rye's previous captures at Bristol, to which Mr. Shipp refers.

It was during the British Association meeting at Bristol in 1875, that a few entomologists, including the late H. W. Bates and E. C. Rye, in company with R. McLachlan, A. Hudd, Stephen Barton, and the writer, spent a pleasant day collecting in Leigh Woods. On the morrow we all met by appointment to dine with our friend Barton; but Rye was late, and we waited like hungry men. But when Rye appeared he produced, in exculpation, a small bottle containing a series of specimens of this very rare species which he had that morning discovered, and so graphically did he describe the position in the woods of the old rotten stump that had contained the find that I had no difficulty, on the following day, in going direct to the same. It was acting on Rye's instructions that I took the best part of my set, and am able to give what was really his hint, and that is to spread out handfuls of the old decayed wood in the sun, and smoke a contemplative pipe in the vicinity. In periods varying from a quarter to half an hour, I found that these bright-coloured little beetles were sure to be seen. The successful experiment of 1875 will probably be equally efficacious in 1894.

Pretoria, Transvaal, March 7th, 1894.

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#### MR. W. BATESON ON VARIATION.\*

THE author of this work appears to be amongst the number of those who think that the constant repetition of the words "Variation" and "Selection" by biologists—in a manner that reminds one somewhat of the Thibetan praying-machine—is not a sufficiently definite explanation of the "origin of species," and he apparently hopes to get some help from the introduction of the term "discontinuity." Whether we are in this way to get any assistance or not in our awkward efforts to understand that which is certainly at present very obscure, if not entirely incomprehensible, we shall not here consider; indeed, had the work consisted merely of speculative matter, we should not have brought it to the notice of the readers of the 'Entomologist,' even though the speculations were presented in a thoughtful and graceful form, as is here the case.

\* 'Materials for the study of Variation, treated with special regard to discontinuity in the Origin of Species.' 8vo, pp. xvi. & 598. Macmillan & Co., London. 1894.

The work has, however, much stronger claims on the attention of entomologists, for the author has brought together a very large number of instances of unusual structures and relations of structures, while insects receive quite a fair share of attention at his hands. As this latter feature is a departure from the usual custom of "biologists,"—who only too often in their considerations either entirely omit reference to the most extensive and zoologically important class of the animal kingdom, or treat it in a fashion that is perhaps even worse than total omission,—it is only proper that the work should receive from entomologists an appreciative welcome, as we are sure will be the case when it becomes known to them.

Under the term "Variation" Mr. Bateson includes a wider range of facts than the word is usually made to cover; a large part of his work, indeed, refers to "monstrosities," which are not generally treated as variations, though no doubt "*sensu latiori*" they are such. A large number of these cases are described by the author, who has had specimens entrusted to him by various entomologists, foreign as well as English. As to these particular sorts of variations he has been able to find some interesting results, and, as might be expected, to discover that order prevails even in this realm of apparent disorder. Symmetrical relations of a perfect kind are shown by close scrutiny to be present in cases where, on superficial examination, such a condition would be assuredly treated as wanting. Hence extra legs and antennæ form one of the most interesting sections of the work. The extra wings of *Lepidoptera*—of which a number of instances are described—have not, however, yet given any sign of being anything but quite disorderly productions.

Another interesting section to entomologists will be found under the heading "Ocellar markings, especially those of *Lepidoptera*." Here the remarks of the author—particularly if they be read in conjunction with Griffiths' and Urech's researches during the last year or two—will be found very suggestive.

There are very many forms of variation that are not touched on at all in the present work, and we may express a hope that the author will soon be able to treat these in another volume. Colour variations, size differences, and dimorphic and cyclical forms are not here considered. Using the word "variation" in a sense so wide as Mr. Bateson does, we think even secondary and tertiary sexual distinctions should be included. Probably a systematic review of the various morphological forms that may be found in a single physiological species would, if well done,—that is, if the species were well chosen,—be as interesting a study in variation as could be made. The difficulties in the way of carrying out such a review are, however, at present so great that much time would have to be given to the adequate performance of the task. Perhaps it was this consideration that



induced Mr. Bateson to take "discontinuous" variation for his first study. We may hope that by giving us a second volume he will illustrate practically the value of continuity, and also help us to realise more clearly than we do at present in what way continuous differs from discontinuous variation.

The book is provided with excellent indexes, which add very considerably to its value.

D. S.

## THE GENUS *PHILOMETRA*, GROTE.

BY JOHN B. SMITH.

In the 'Entomologist' (*ante*, pp. 97-99) Mr. Butler makes some remarks under the above caption, involving a criticism of my 'Catalogue,' and of some statements made in it.

I have just completed a monographic revision of the American species of Deltoids, in which the characters of all the genera are fully worked out; hence I will not discuss them here at any great length, but will confine myself to such admissions and explanations as Mr. Butler's remarks seem to make necessary.

To make one portion of the criticism clear, I reproduce the citations especially referred to, just as they stand:—

### P. GOASALIS, *Wlk.*

1859. *Wlk.*, C. B. Mus., Het. xvi. 134, *Epizeuxis*.

1859. *Wlk.*, C. B. Mus., Het. xix. 876, *Epizeuxis*.

*metonalis*, *Wlk.*

1859. *Wlk.*, C. B. Mus., Het. xvi. 236, *Horminia*.

*longilabris*, *Grt.*

1872. *Grt.*, Trans. Am. Ent. Soc. iv. 99, 309, *Philometra*.

1873. *Grt.*, Bull. Buff. Soc. Nat. Sci., i. 40, *Philometra*.

This is the plan of the entire Catalogue, and it gives first, in full-faced type, the name of the species, centred. Next follow the references, each occupying a full line, beginning with the date and ending with the generic term used by the author cited. Next follow the synonyms, if any; a full line devoted to each name, which is flush and printed in italics. Under each synonym follows its bibliography, exactly as under the original species, and the last citation to each such name is that in which it is made a synonym. Where no such citation occurs it indicates that the reference is original in the Catalogue. I must confess this seems very clear to me, and I have not heretofore found anyone that failed to understand the plan of the Catalogue in the way Mr. Butler seems to have done. All my monographic works for the few years last past have been on the same plan as

far as the bibliographical features are concerned, and none of these have ever been misunderstood, so far as I have learned. On the question of Mr. Butler's preference for some other method I can of course have nothing to offer.

Two of Mr. Butler's points are well taken:—It is *gaosalis* instead of *goasalis*; and the species is first described in vol. xix. p. 876, not in vol. xvi. p. 134. How I made the error I do not know, nor is it material; similar errors occur in many large catalogues. As a result *metonalis*, Wlk., takes priority, and the synonymy is as Mr. Butler gives it,—a mere substitution of one Walker name for another.

Concerning the generic terms used, I have concluded that *Chytolita* is not the same as *Herminia*, whichever species is used as type; but yet less does it correspond with *Zanclognatha*, as Mr. Butler seems to indicate.

The type of *Herminia* cannot, even yet, be considered finally fixed, for there is no agreement in the matter; but assuming that Dr. Moore was correct in fixing *barbalis* as typical, our American species of *Philometra* are not congeneric, if Lederer's description of antennæ and venation of the European form are accurate. The basis for my conclusions on this point will be found in the descriptions and drawings in my 'Revision of the American Deltoids.'

There remains one point only to be considered, and that is—"Under *goasalis* Walker has also a specimen of *Herminia petrealis*, Grt., which he did not recognize as distinct." I meant just what I said; and if *metonalis* had been intended, I would have used that name. Referring to my original notes I find that, in examining one box, I made the memorandum:—" *Epizeuxis gaosalis*, Wlk.? Type = *Chytolita petrealis*, Grt. Type"; indicating that I compared the specimen with the Grote material. Later in my note-book, seventeen other memoranda intervening, I come upon the note referring to another box:—" *Epizeuxis gaosalis*, Type from Nova Scotia = *Phil. longilabris*. Another specimen is labelled in Walker's handwriting, and is *petrealis*, Grote. The type must govern."

Walker's description indicates only one specimen, that from Nova Scotia; but there is nothing to prevent other specimens being labelled by Walker after the description; and that Walker mentioned only one specimen in 1859, cannot be used as an argument against any statement of mine based on an examination made in 1891. I therefore wish the above extracts from my notes to stand as a reiteration of the paragraph quoted from my Catalogue, and I assert their correctness.

Mr. Butler's corrections in the really essential parts of his criticism are admitted, and need no apology, since truth and accuracy are the ends for which both he and I professedly labour.



The only matter upon which I am left in doubt, after carefully reading Mr. Butler's note, is, whether he could really have misinterpreted my citations in the (to me) absurd manner suggested by him.\*

## REMARKS ON CERTAIN GENERA OF COCCIDÆ.

By W. M. MASKELL.

(Concluded from p. 95.)

*Lecanium nigrum*, Nietner, 1861; *Lecanium depressum*, Targioni, 1867-8; *Lecanium begoniæ*, Douglas, 1892,

THE first of these three has been reported from India and Demerara; the second from hothouses in Europe and New Zealand and from open air in Australia and Sandwich Islands; the third from Demerara. They are thus evidently all from tropical, or at least hot, countries.

I have arrived at the conclusion that they are all practically identical, or at the most varieties of one species. Priority in nomenclature compels me to adopt *L. nigrum* as the type, although really no scientific description of that insect appeared before that of Mr. Douglas in 1891. Nietner (Enemies of Coffee-tree) gives no details; and Mr. Green (Ind. Museum Notes, 1889), though giving several figures, attaches thereto scarcely any description. On the other hand, Targioni (Stud. sulle Coccin. and Catal. 1868) is equally unsatisfactory as regards *L. depressum*, but Signoret (Ann. de la Soc. Ent. de France, 1873) gives sufficient details and really deserves to be credited with the species. *L. begoniæ* is only described by Douglas (Ent. Mo. Magazine, Aug., 1892).

I may observe that the remarks about to be made are founded on specimens received by me,—of *L. nigrum*, from Mr. Cotes (Indian Museum); of *L. depressum*, from Dr. Signoret; and of *L. begoniæ*, from Mr. Douglas; so that I can have little doubt as to identification. Strictly, these observations ought to have been made in my paper of 1892, when I reported *L. depressum* from Sydney and Honolulu, for I had then in my possession the same material; but having many other things to think of I overlooked the point.

\* In answer to the above, I would also reiterate my former statement:—The first reference given by Mr. Smith was not needed, and therefore put me out, as it evidently did him also; had the synonyms been arranged in the usual way, such an error could not have occurred. As already stated, only *one* specimen, labelled as *E. gaosalis*, ever existed in our collection: therefore I fail to comprehend how Mr. Smith could have made notes on *two* in different drawers. I have gone through the whole, and no second example, so labelled, is in any Museum drawer.—A. G. B.

The main reason for considering the three insects named as belonging to one species is the character of the epidermal cells; and I may quote here the expressions thereon of the authors mentioned. Previously, however, we may discard an external character referred to by Signoret,—“dorsum slightly elevated, with two small depressions in specimens from Italy and two carinæ in specimens from France,”—because evidently this is not a constant character. As regards the epidermis, Signoret says of *L. depressum*:—“Exhibiting a great number of tessellated irregular plates forming a marquetry pattern; each plate has a darkish band round it, with a clearer but still rather dark surface-space and a central clear space with a small orifice.” And in his Plate 13, fig. 11a, he delineates the cells as irregularly polygonal.

Douglas says of *L. nigrum*:—“Under the microscope the whole surface is seen to be covered with a tessellation of closely approximate small yellow dots and punctures”; but he does not specially mention their form.

Douglas says of *L. depressum*:—“Surface covered with a reticulation of irregular shallow cells with a pale centre or ocellus.”

Douglas says of *L. begoniæ*:—“Covered with contiguous, minute, oval, yellowish dots.”

Green, Targioni, and Nietner make no mention of the epidermal cells.

It seems clear here that Mr. Douglas agrees with Dr. Signoret as to the irregular form of the cells in *L. depressum*, but his language leads one to think that he considers those of *L. nigrum* and *L. begoniæ* to differ in being more dot-like and oval.

But, on further consideration, it is doubtful whether Mr. Douglas made any examination of the epidermis except an *external* one (that is, viewing the insect *in situ*, without preparation). For although, examined in this manner, a certain (though by no means a great) difference seems to exist in the cell-forms, yet closer observation by transmitted light shows that in reality they are identical. The cells of *L. nigrum* and *L. begoniæ*, which at first sight appear more or less oval, are then seen to be very clearly polygonal and irregular, and to form what Mr. Douglas says of *L. depressum*, a “reticulation.” In some specimens of *L. begoniæ* I find the cells perhaps rather smaller than usual; but as a rule, in all three insects, the average (longest) diameter of a cell is about the same, 1-500th of an inch. The outer band and the central orifice are visible in all. Perhaps the cells in *L. begoniæ* may be the darkest in colour.

Looking therefore at the epidermis, it appears sufficiently clear that the three insects are identical; while in size, colour, and generally convex form, they also agree. Mr. Douglas, indeed, says that some of his specimens of *L. depressum* were



greenish yellow instead of brown; but the difference is not important. He also says that *L. nigrum* belongs to Signoret's 4th series, with *L. coffeæ* and *L. hibernaculorum*; but this is certainly due to his considering its cells as oval, whereas, being polygonal, the insect goes with *L. depressum* into the 5th series.

With regard to the antennæ, I do not find any difference between *L. nigrum* and *L. depressum*; the figures given by Signoret and Douglas agree, and so do my own specimens; both have eight joints, of which the third is the longest. In *L. begoniæ* there appear to be only seven joints; but Mr. Douglas specially remarks that in the fourth joint there is "a constriction simulating a joint"; and this "false joint" (as I have called it in other Lecanids) seems quite enough to raise doubts as to any definite separation of this insect from the others.

As regards the feet, Signoret says of *L. depressum* that the digitules of the claw are dilated and "one larger than the other." Douglas says nothing of the foot of *L. depressum*; as to *L. nigrum*, he says:—"Digitules long, broad, much dilated"; and of *L. begoniæ*, "digitules normal." I have not myself been able to detect any valid difference in the three, nor can I see the unequal digitules of *L. depressum*.

Taking therefore these important features,—the epidermis, the antenna, and the foot,—it seems fairly clear that there is no real difference between the three insects named, at least as far as concerns the adult female. The females of the second stage appear to be equally similar. I have not observed the larvæ or the males, nor, I think, has anybody except Mr. Green, who gives figures (without description) of the adult male of *L. nigrum* and its waxy pupal test. Possibly *L. begoniæ* might be looked on as a variety on account of its antenna, and *L. depressum* on account of unequal digitules; but these are doubtful differences, and the three must be taken as really one species. Priority of nomenclature, as above mentioned, determines this as *L. nigrum*, Nietner.

Wellington, New Zealand, Oct. 12, 1893.

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## THE CONFUSION IN THE NAMES APPLIED BY WALKER TO GENERA OF MOTHS.

By A. G. BUTLER, PH.D.

It would appear that the late Francis Walker must have kept a list of names by him to use for his new genera, and that he did not by any means invariably remember to cross off a name after he had used it. This has been a source of endless trouble to his successors; and inasmuch as the corrections

which he subsequently published were not, at the same time, made in the cabinet-drawers, considerable confusion was naturally caused subsequently.

As an instance of this kind of blundering I may cite the following:—In *Lepidoptera-Heterocera* (Part xvi. p. 7) Walker described a species of his genus *Episparis* as the type of a new genus which he called *Neviasca*, the type being *N. varialis*, from India.

At page 199 of the same volume of the Catalogue, a Bornean species (belonging to a section of the genus *Bertula*, from which it differs in the strongly pectinated antennæ of the male) was made the type of a new genus, to which the name *Neviasca* was again given.

When making up his Index, in vol. xix., Walker discovered this mistake; therefore, at p. 888 of that volume, he altered the name of the second genus *Neviasca* to *Cardalena*. Here one would have supposed that the confusion might have ended.

In vol. xxxiv., forgetting that he had already given a new name to his second genus *Neviasca*, Walker proposed, at p. 1174, to call the latter *Gabrisa*.

At p. 1266 of the same volume he described an Australian insect as the type of a new genus, to which he also gave the name *Gabrisa*.

Finally, in vol. xxxv., he proposed to alter the name of his second genus *Gabrisa* to *Voliba* (*vide* p. 1983).

And, in addition to all this confusion, one of the references given in the Index to vol. xxxv. is incorrect. Can it be wondered at that when we in England, with all the material before us, find it difficult to unravel Walker's tangles, many foreigners have been driven to throw up the almost impossible task in despair.

The case which I have cited is by no means unique, and each one needs to be followed up step by step, and the facts accurately recorded, before all difficulties can be smoothed away.

## SIX YEARS' ENTOMOLOGY IN CO. GALWAY.

BY THE HON. R. E. DILLON.

(Continued from p. 91.)

*Acronycta ligustri*. Fairly common. Comes to light, but chiefly taken flying round privet and lime at dusk.

*Acronycta myricæ* var. *montivaga*. Two specimens taken *in cop*. within fifty yards of the house, July, 1889.

*Diloba caruleocephala*. Comes freely to light when the moth-trap is placed high. I only took seven specimens this spring in the trap, on the top of an old castle about seventy feet from the ground.



*Leucania extranea*. In July, 1891, I took one specimen at sugar on an ash tree. It was immediately identified by myself, and by Mr. Kane afterwards.—*L. impudens*. Several specimens taken at light; three flying, July 30th, 1892.

*Gortyna ochracea*. One specimen flying, June, 1891.

*Xylophasia sublustris*. Fairly common at sugar.

*Dipterygia scabriuscula*. One specimen in 1891; month uncertain, as it is mentioned in a list extending over two months and a half during my absence. It was taken by my gamekeeper.

*Cloantha polyodon*. One specimen taken at sugar, July, 1891, on the same ash tree as *L. extranea*. I did not identify it, but Mr. Kane recognised it immediately, from the sketch I had made of it in my diary.

*Luperina cespitis*. Several specimens; two this year (1893).

*Apamea ophiogramma*. One specimen taken here by Mr. W. F. de V. Kane, 1893, at sugar along a river.—*A. leucostigma*. Not uncommon at sugar.

*Miana bicoloria*. Not uncommon, but only a few seen at a time.

*Agrotis saucia*. One specimen taken at sugar, August, 1893, by Mr. Kane.—*A. nigricans*. One specimen at sugar, August 2nd, 1892.—*A. corticea*. Two specimens at sugar, August 2nd, 1892.—*A. agathina*. One specimen, 1892.—*A. strigula*. Two specimens; one in moth-trap; the second flying over heather, June, 1893.—*A. præcox*. Two specimens at sugar, July 29th, 1892.

*Noctua dahlîi*. I have only taken one specimen, at dusk, on scabious, August, 1893. Mr. Kane, I believe, secured one also near the same place, the same evening.—*N. sobrina*. Two specimens taken here; one at sugar, and the other flying near sugar, August, 1892.—*N. castanea*. Two examples, September, 1893.

*Triphæna subsequa*, Hb. One specimen, August, 1893, at sugar.

*Amphipyra pyramidea*. Very common; a nuisance at sugar.

*Panolis piniperda*. Not uncommon. Mr. Kane and I secured about five and twenty specimens, at willow, in the spring of 1893.

*Pachnobia rubricosa*. Not uncommon.—*P. hyperborea*. An imago emerged in a breeding-cage in a warm room, March 29th, 1892. The note in my diary reads: "A moth emerged this morning; looks like *P. alpina*, but seems impossible." The larva was picked up on a bog while shooting. The insect was sent to Mr. Kane, who immediately identified it. On his first visit I took him to the bog in question, where "*Empetrum nigrum*" grows very freely throughout. I searched a good deal this summer, but the food-plant did not—even on the hottest days—show signs of larvæ feeding.

*Taniocampa opima*. Not uncommon. Mr. Kane and I secured over twenty specimens, at willow, in the spring of 1893; several subsequently were taken in moth-trap.—*T. populeti*. Two specimens; (1) April 13th, 1893, on a stalk of dead ragwort, in the afternoon; (2) April 19th, 1893, in the moth-trap.—*T. gracilis*. Not uncommon; several were taken in the moth-trap.—*T. munda*. Four specimens at willow, March 19th, 1894.—*T. pulverulenta*. Not uncommon, but local.

*Orthosia lota*. Fairly common.

*Anchocelis rufina*. One specimen, September, 1893.—*A. lunosa*.

Two specimens were on ivy near the town of Galway.—*A. litura*. Three specimens near Galway at ivy; one at rest on a black-thorn tree.

*Oporina croceago*. One larva was picked up on a road under an oak tree, 1889. I have no record as to the date of its emergence, as I confounded it with *Xanthia citrago*, owing to the poor description in my book.

*Xanthia citrago*. Two specimens, one at sugar and one flying, 1889.—*X. aurago*. One specimen, August, 1892, at sugar, identified by Mr. Kane from a sketch in my diary.

*Cirrhaedia xerampelina*. Two specimens: (1) August, 1892; (2) August, 1893; taken by Mr. Kane.

*Calymnia trapezina*. Common.—*C. affinis*. One specimen, 1890.

*Dianthæcia capsicola*. One specimen.—*D. cucubali*. Three specimens: two taken in moth-trap, May 11th, 1893; one by the gamekeeper in my absence, in June, 1893.

*Hecatera chrysozona*. Fairly common. I have only once taken an imago, but have had many larvæ, though they were found difficult to rear.—*H. serena*. Two specimens, in cop., August 14th, 1891.

*Polia chi*. One specimen.

*Dasypolia templi*. One specimen flying, October, 1890, near the Deer park (oak wood and swampy ground).

*Epunda lichenea*. Two specimens flying in a blackthorn scrub, in the afternoon, September, 1893, near Galway.

*Cleoceris viminalis*. Two specimens, taken by the gamekeeper in 1891 and 1892; date uncertain; they were not identified till the spring of 1893, when they, with others, were sent to Mr. Kane.

*Hadena protea*. One specimen, taken at the end of July, 1893, by the gamekeeper, was identified by me on my return. Mr. Kane examined the insect in August.—*H. glauca*. One specimen, moth-trap, May 23rd, 1893.—*H. contigua*. Four specimens: three boxed on trunks of small birch trees; one flying, September, 1893, near the town of Galway.—*H. rectilinea*. Several specimens, near Galway town, on trunks of trees and palings. A single specimen was caught here in the moth-trap, September, 1893.

*Calocampa solidaginis*. One specimen, flying near ivy, not far from Galway, September, 1893.

*Xylina semibrunnea*. One specimen, at ivy, September 3rd, 1893, near Galway town.—*X. socia*. Not uncommon.

*Asteroscopus sphinx*. Not rare. Nine male specimens during the spring, 1893, in the moth-trap. Another male was taken flying round a lime tree, August, 1890.

*Cucullia verbasci*. Several specimens taken during different years; never common.

*Plusia bractea*. I never saw this insect until 1893. I took eleven specimens in July and August.

*Bankia argentula*. One specimen while grouse shooting, August 28th, 1893.

(To be continued.)



## NOTES AND OBSERVATIONS.

THE MELANISM CONTROVERSY. — Mr. Kane and others appear to attribute melanism to two entirely different causes. Firstly, that in countries with defect of sunshine (such as the British Isles) dark coloration would be advantageous, and consequently is fostered by natural selection; secondly, to adaptive coloration. What I want now to ask is, where do they draw the line between the two? To illustrate my question I will bring forward two places on the sea-coast (distant about thirty miles from each other), Portland and Bournemouth. The former is one mass of stone; the latter is heath-land, the soil of the greater part of which is black and wet; but Bournemouth has a considerably warmer climate, a greater amount of sunshine, less fog, and a much smaller rainfall than Portland; yet there is a considerable amount of difference in coloration between certain species of insects found in the two places, those from Portland being invariably the lightest. For instance, *Satyrus semele*: the ground colour of the under side is light at Portland, dark at Bournemouth and also at Glanvilles Wootton. *Lycæna ægon*: some females I have from Portland are of a lighter brown than usual, and are without the orange bands, reminding one of the var. *allous* of *L. medon*. *Gnophos obscurata* is of a light grey shade at Portland, still lighter on the chalk soil at Lulworth; of a darker grey shade at Bournemouth, still darker on Parley Heath. *Acidalia promutata* is much lighter at Portland than at Bournemouth. The following species are much lighter than is usual in Portland, but they do not all occur at Bournemouth:—*Epunda lichenea*, *Aporophyla australis*, *Heliophobus hispidus*, *Agrotis valligera*, *Scoparia mercurella*, *Larentia olivata*, and *Sericoris cespitana*. *Fidonia atomaria* and *Scodionia belgaria* are slightly darker on Parley Heath, about five miles inland, than they are at Bournemouth on the coast. Many species of Lepidoptera are darker on the Surrey heaths than they are on the Sussex chalk downs, yet I believe there is no appreciable difference in the rainfall or the annual amount of sunshine. In reference to pale varieties occurring on chalk soils, it may be as well to mention that I once saw a white variety of *Lycæna alsus* which had been taken by a boy at Winchester; and that I possess a pale buff-coloured variety of *Argynnis aglaia* with the black spots and markings very faint, taken at Dover by Mr. Leplastrier. The Rev. W. T. Bree, in recording it in the 'Magazine of Natural History' for 1832, writes: "The specimen reminds one of some plant which, having grown in the dark, has, in consequence, produced its flowers nearly colourless." The yellow varieties of *Zygæna*, I think, may be cited as another instance of occasional pale varieties occurring on chalk soils. Perhaps some of the pale varieties are owing to their emergence during brilliant moonlight. In reference to the latter part of Mr. Kane's paper (Entom. xxvi. pp. 307-311), leaves frozen on to the ice will also absorb the sun's rays, the ice melting beneath and around them. — C. W. DALE; Manor House, Glanvilles Wootton, Jan. 3rd, 1894.

NOTES ON MELANISM. — The following instances of melanism, or tendency thereto, have come under my notice at various times during

the last fourteen years. The districts in which they have occurred were chiefly in Somersetshire and South Wales. In Somersetshire the locality was near the Bristol Channel, the valleys and low-lying land being wet in character, often flooded in a rainy season, the hills above being of the carboniferous limestone formation. In S. Wales the district was near the sea-coast, a great deal of marshy land being near, the valleys often wet, the hills above being of the old red sandstone. The following were the species noticed:—*Epinephele ianira*. Males not unfrequently very dark and velvety-looking near the sea. S. Wales.—*Pieris napi*. Females in some valleys occasionally broader-veined and darker-looking than typical specimens. S. Wales.—*Fidonia atomaria*. One specimen nearly black, amongst heather, on high ground near the Mendips. Somerset.—*Tephrosia crepuscularia*. Brown specimens, frequently. Somerset.—*Boarmia repandata*. The dark-banded form very frequent in S. Wales, and not unfrequently in Somersetshire.—*B. gemmaria (rhomboidaria)*. A very dark specimen. Somerset.—*Abraxas grossulariata*. A dark specimen on the Cotswolds, Gloucestershire; a dry situation.—*Hybernia marginaria (progemmaria)*. Specimens approaching “*fuscata*” more or less not unfrequent. Somerset, the darkest specimens taken on hills above Bath—a dry situation.—*H. defoliaria*. Specimens freckled over with dark spots, occasionally (Newman’s 2nd figure). Somerset.—*Camptogramma bilineata*. One specimen with dark shade extending from middle of fore wings to the hind margin, and generally darker than typical specimens. S. Wales.—*Thera obeliscata*. One specimen with upper wings dark slate-colour, under wings dusky. Somerset.—*Hypsipetes sordidata (elutata)*. Not unfrequently much darker and more suffused than typical specimens; one with upper wings entirely dark brown, no markings. S. Wales.—*Cidaria russata (truncata)*. Upper wings frequently dark smoky brown and suffused (*perfuscata*?). I did not see a single typical specimen (*centumnotata*, Newman) last summer. S. Wales.—*Phigalia pedaria (pilosaria)*. One specimen with upper wings nearly black. Somerset.—*Xylophasia polyodon*. Specimens with upper wings black-brown, every season. S. Wales.—*Miana strigilis*. Dark brown specimens frequent in S. Wales, and occasionally in Somersetshire; “*latruncula*” appears the most common form in S. Wales.—*Miselia oxyacanthæ*. Dark brown specimens, as figured in Newman, several seasons. Somerset.—*Diurnea fagella*. Grey specimens not unfrequent. Somersetshire.—T. B. JEFFERYS; Langharne, Carmarthenshire, Feb., 1894.

CURIOUS FIND IN AN “ATLAS” COCOON.—Having recently purchased some cocoons of the Indian silk-moth *Attacus atlas*, I was surprised at the extraordinary weight of one of them, which, although a very fine one, seemed heavier than it should be. I therefore opened the cocoon, and was surprised to find inside it a piece of quartz, about three-quarters of an inch long by half an inch in width and thickness. The pupa was a pulverised, unrecognisable mass, evidently from violent contact with the piece of quartz whilst in the soft and tender stage following change from larva to pupa. The question is, how came the piece of quartz into the cocoon? The latter had evidently been spun upon a tree, because it is enclosed within a leaf, and has the pedicle



woven around a stem attached to the leaf. I have never met with a similar occurrence before; nor has Mr. John Watson, of Manchester, an entomologist of long experience, to whom I mentioned the fact. Mr. Watson's idea is, that the portion of the tree on which the cocoon was spun probably rested against a rock, and the piece of rock being loose got pulled off by a sudden jerk of the tree. The, to my mind, most inexplicable part of the matter is, the fact that the piece of quartz is quite free within the cocoon, not a single thread being attached to it.—T. J. W. FINCH; Swindon, March 27th, 1894.

LYCÆNA ARGIOLUS.—Referring to Mr. Chope's notes upon this butterfly (*ante*, p. 135), I can give some feasible explanation of the coincidence he has observed. The first question to answer is, what is the cause of an unusual profusion of the berries themselves, in this case those of *Ilex aquifolium*? There is certainly very little, if any, reliance to be placed upon the popular country saying, "That a large crop of berries in the autumn, predicts the severity of the following winter." On the face of it, it is evident that the only weather which can have any effect must be the preceding, and not the following. If the weather in April and May is gentle, warm, and bright, the flowers of the holly will have a good chance of being fertilized by insects; so that, other conditions being favourable, a large crop of fruit in the autumn will be the result. If, however, the weather during that time is cold and boisterous, an exactly opposite effect may be naturally expected. The weather which is favourable to the tree will also be favourable to *argiolus*, and *vice versâ*, for he is a most sun-loving little fellow; and unless he can get his proper share of sunlight, without much rain and wind, he prefers to remain snugly at home, beneath a protecting holly-leaf, leaving only the "wilder spirits" to do all the dancing and courting. A boisterous wind may perhaps destroy some of the already-laid ova, but I do not think this is often the case; for the butterfly always takes care to deposit its eggs upon the under side of the calyx, obviously for the purpose of preventing them from being blown away, together with the loosely-attached petals. Last year, in Sutton Park here, *argiolus* was exceedingly abundant, at the same there was plenty of holly-blossom upon the trees; but owing to a severe storm of wind and rain, which sprang up and lasted through the greater part of April 29th and 30th, large masses of bloom were destroyed, causing in most situations a scarcity of fruit in the succeeding winter. Although the crop of berries has upon the whole been small, I do not think it will necessarily affect *argiolus* this year, for the gale already mentioned was of too short a duration to prevent the laying of the eggs, and they when once laid are, I believe, tolerably safe. I have endeavoured to point out only one cause; there may be many others; so that the case may really be much more complex than it at first appears.—A. J. JOHNSON; Boldmere, March 29th, 1894.

MESAPIA PELORIA, *Hewitson*.—With respect to the ambiguity in my description of the neururation of this species, alluded to by Mr. Edwards (*ante*, p. 128), it is, I think, only necessary to say that I reckon the origin of the third subcostal nervule from the point where the upper radial rises, and not at the point of separation of the third and fourth subcostals, which I have said is "about half-way between the end of

the cell and the apex," or in one specimen, more, for the neurulation varies a little in different specimens. However, the butterflies allied to *Aporia* may ultimately be grouped. I am inclined to think that *A. cratagi* will stand alone in its genus, the margins being almost entirely destitute of fringes; whereas, *soracta*, Moore, &c., are very strongly fringed. Is not this a character which should be regarded as of generic value?—W. F. KIRBY; April 2nd, 1894.

NOTES ON SAWFLIES.—During the past two years I have turned my attention to breeding and rearing sawflies, and have found it a most interesting study, requiring little apparatus, and that chiefly of the rough-and-ready kind. The principal dangers are (1) death of the egg through the withering of the plant in which it has been laid; (2) death of the larva in the cocoon through mould, or simply shrivelling up just before the pupa stage. The best remedy for the first evil is to provide healthy growing plants for the parent to deposit the eggs in, but where this is not convenient, I have found that even should the leaf wither, the eggs may often be preserved by placing them on blotting-paper in a soup-plate full of water. I have hatched many larvæ in this way, and on the whole they have not proved more delicate than others. The eggs of *Nematus pavidus*, however, are an exception; for some (to me) mysterious reason they invariably perish if water is allowed to touch them. I have succeeded in inducing several flies to deposit virgin eggs, the result being as follows:—Male flies only from *Abia sericea*, *Cræsus latipes*, *C. septentrionalis*, *Nematus betulæ*, *N. ribesii*; larvæ from *Eriocampa annulipes* and *Hylotoma gracilicornis*; eggs from *Cladius viminalis*, *Dineura virididorsata*, *Nematus lacteus*, *N. pavidus*, *Strongylogaster cingulatus*. In every case the parent fly was kept separate from all others from the moment she left the cocoon till after the eggs were laid. *Abia sericea*, *Cræsus latipes*, *C. septentrionalis*, and *Nematus betulæ*, laid very freely, and the larvæ hatched well and were nearly all reared. *Eriocampa annulipes* laid well, but when the larvæ were full-fed all but two died off without any apparent cause. The two survivors have not yet hatched. It almost seems as though *Hylotoma gracilicornis* has only partially acquired the power of parthenogenesis. Though the dozen females I had bred all deposited eggs, only two showed any signs of growth; both these hatched, but the larvæ were small and sickly, and perished in the cocoon. I may mention that I have noticed two forms of these larvæ; one (the commoner in this neighbourhood) being a beautiful bright mulberry colour, the other a yellowish green. Both have the usual yellow markings and black tubercles. The red is not very bright till the larva is about three-quarters grown, and becomes intensified shortly before spinning up. Both forms may be found feeding side by side, and are equally easily reared. I have not yet been able to discover whether the offspring of a "red" fly will also be red. The female of *Macrophya punctum album* will live a long time in captivity. Last year I caught a specimen which lived about three weeks, and deposited several eggs. She fed on ash leaves, making small irregular holes all over their surfaces. All round the holes the leaves appeared much bruised, and soon turned black. I should be glad to know whether this fact is well known, as I can find no reference to it in any of my books on entomology.—(Miss) E. F. CHAWNER; Lyndhurst, Hants, April, 1894.



THE TRUE DISTINCTION BETWEEN *PAPILIO EPIPHRON*, Kn., AND *PAPILIO CASSIOPE*, Fb.—At the meeting of the South London Entomological Society, on March 8th, the statement, which has been often made, was repeated, that the distinction between these two forms consists in the possession of white pupils by the ocelli in the type (*epiphron*). Having the original descriptions, both of Knoch and Fabricius before me, I am inclined to think that this is not the true mark of distinction. Knoch, in his diagnosis, says, “utrobique ocellis seu maculis nigris”; and in his description adds, “Instead of the ocelli some specimens have, on one or both sides, only black spots or points.” I am disposed to believe that the true mark of distinction is to be found in the condition of the orange band on the hind wings. In the type this, as shown in Knoch’s figure, is a band; whilst Fabricius, in his description of *cassiope*, says, “in posticis in primis maculari rufa et in hac puncta tria nigra,” and of the under side of the same wings he says, “absque fascia rufa.” This suggests to me that *cassiope*, Fb., is the form in which the marking on the upper surface of the hind wings consists of three orange rings quite distinct from each other, with a black spot in the centre.—F. J. BUCKELL; Canonbury, April 6th, 1894.

LEPIDOPTERA FREQUENTING FLOWERS OF *CALTHA PALUSTRIS*.—Mr. G. W. Oldfield (*ante*, p. 134) suggests it as probable that as no Lepidoptera are included by Professor Hermann Müller in the list that he gives, in his work ‘The Fertilization of Flowers,’ of the insects that visit *Caltha palustris*, this plant (as well as *C. segetum*) is unsuitable for fertilization by Lepidoptera. Without wishing now to enter into the question of how large or how small a part it plays in the work of fertilization, I should like to mention that the brilliant and common little moth, *Micropteryx calthella*, regularly frequents in large numbers the flowers of *Caltha palustris*, wherever this plant occurs in its haunt. This fact was recorded many years ago by the late Mr. H. T. Stainton in the T. B. Lep. Tin., p. 43 (1854), and again in the ‘Manual,’ ii. p. 301 (1859).—E. R. BANKES; The Rectory, Corfe Castle, April 9th, 1894.

CLOSTERA ANACHORETA.—I wrote to you last November (Entom. xxvi. 361) respecting the finding of ova of *Clostera anachoreta*. As you appeared to think that I might have been mistaken in the species, I am writing again to say that six of the perfect insects emerged between the 6th and 8th of this month, and are finer and more beautifully marked and coloured than any I have previously seen. I have been fortunate in obtaining a considerable number of ova. Some years ago I bred *C. anachoreta* from bought ova, but the imagines were not to be compared with these I have now. I imagine the early appearance of the insects is due to their having been kept indoors.—(Miss) A. D. EDWARDS; 56, Marina, St. Leonards-on-Sea, April 9, 1894.

DESCRIPTION OF THE LARVA OF *CALLIMORPHA HERA*.—Referring to the clusters of warts on the back of the larva (*ante*, p. 122), Mr. Studd adds:—“Each of the clusters consists of seven warts; a central roundish one from which radiate two oval ones on each side, and one towards the head and another towards the anal segment. The two latter are of a lemon colour, the one towards the head being narrower than the other. The remaining five are a rich fulvous brown.”

**COLIAS HELICE IN CORNWALL.**—Having seen that your correspondent, Mr. B. Stafford Chope, writes (*ante*, p. 135) that he has never heard of *Colias edusa* var. *helice* being taken further west than Sidmouth, I thought it might be a matter of interest to state that near Falmouth my cousins and I, in August, 1892, took six of these insects in less than a week, three being taken in one morning; and we also saw several others that, owing to the nature of the ground, we could not catch. Of these six, all of which are now in my possession, only one is the white form; the other five are a creamy yellow colour. *C. edusa* simply swarmed in several fields near where we were staying, but we did not see a single *C. hyale*.—E. H. TRENERRY; 3, North Road, Clapham Park.

**SMERINTHUS TILIÆ TWO WINTERS IN PUPA.**—I should like to record the emergence, on the 8th of this month (April, 1894), of a female *Smerinthus tiliæ*, which has been in the pupa state since July, 1892. It was one of a brood which I reared from the egg in that year, and all of which pupated in the course of July. They all (as I thought) duly emerged in April and May, 1893; but on turning out shortly afterwards the earth in which they had been I discovered this one, and as it seemed lively I put it in a box by itself, where it has been ever since until its present emergence. Is this at all an unusual occurrence? There is no possibility of any mistake about the matter, as I have done no digging since 1892, nor have I had any larvæ or pupæ of this species in my possession, and this particular specimen has been kept in the same box in which it emerged, with no other pupa larger than *Notodonta dictæa* to keep it company. I may add that I had not the smallest expectation of rearing it, as I never attempted to damp it in any way, and it has been kept in a dry room all the time.—(Rev.) W. CLAXTON; Hartley Wintney, Winchfield.

**CHESIAS RUFATA TWO WINTERS IN PUPA.**—In September, 1892, I took about thirty larvæ of *Chesias rufata*. These produced only about half-a-dozen moths in the following May and June, and one on July 1st, a late date. As sixteen of the remaining pupæ appeared healthy, I did not throw them away, but was, nevertheless, surprised to find that an imago had emerged on March 26th last, an early date. Since then two more moths have emerged, proving that this species can pass two winters in the pupal stage, a fact I have not seen stated before.—A. SICH; Villa Amalinda, Burlington Lane, Chiswick, April 6th, 1894.

**THE CYANIDE BOTTLE.**—As bearing on Mr. J. Arkle's remarks on this subject (*ante*, p. 58), the description of a cyanide bottle from Paris may be of interest. Instead of having the cyanide of potassium at the *bottom* of the bottle, this has it at the *top*. The cork, bung, or stopper has a piece scooped out of the top about the size of a florin, and a hole of the circumference of a threepenny-piece is made through this, into which is inserted a little kind of bottle or phial (*ampoule*), with a flat circular-shaped body and a long neck, filled with a few lumps of cyanide, without the addition of any plaster of Paris. I find it advisable to cover over the mouth of the phial with a bit of fine muslin, however, to prevent the cyanide of potassium, when getting sloppy, from running down the sides of the jar. The only thing now is to get a suitable wide-mouthed bottle for the bung. My cyanide jar,



which is fitted up as above, was obtained from a dealer in Paris. I have had it in use for some years, and it has performed its work satisfactorily throughout.—F. BROMILOW; Nice, France, April 3rd, 1894.

NEW EDITION OF HÜBNER'S 'EXOTIC LEPIDOPTERA.'—The first part of this work has reached me, containing the first ten plates of the "Sammlung exotischer Schmetterlinge." I have promised to add a systematic index, and may perhaps add notes on some of the species, but do not propose to interfere with the existing letterpress, which will, I hope, be reproduced as it stands; nor do I assume any responsibility for the work, apart from my own additions.—W. F. KIRBY; April 2nd, 1894.

## CAPTURES AND FIELD REPORTS.

VANESSA ANTIOPA IN ESSEX.—I have no doubt that most entomologists will be interested to know that I took a hybernated specimen of *Vanessa antiopa*, in Epping Forest, on the 7th inst., at 4 o'clock in the afternoon. I found a specimen of *Amphidasys strataria* on February 25th. — W. F. WHITTINGHAM; North View, Walthamstow, Essex, April 11th, 1894.

HETEROCERA FROM CAUSSOLS, ALPES-MARITIMES.—During a stay at Caussols, Alpes-Maritimes, last year (from Aug. 4th to Oct. 7th), I took a good many Heterocera, chiefly at indoor light. The following is a complete list, the accuracy of the names being, in most cases, vouched for by Dr. Hofmann, of Ratisbon, Germany, who kindly determined them. The following is a list of the species:—*Ino ampelophaga* (2), near rushes on damp ground; *Zygæna sarpedon* (1); *Z. fausta*, abundant; *Setina irrorella* v. *flavicans*, one freshly emerged from the pupa, at rest on a rock; *Lithosia unita* (1), *L. caniola* (2), *L. lurideola*? (2), *Emydia cribrum* v. *bifasciata* (1), *E. cribrum* v. *candida* (5); *Arctia fasciata*, a few small larvæ near the roots of trees; *Hepialus sylvanus* (2), found at rest; *Bombyx cratægi* (4), *B. trifolii* (2), the larvæ were common on a *Genista*—probably *G. cinerea*; *Agrotis ianthina* (2), worn; *A. pronuba* (1), torn, on a tree; *A. elegans* (12), *A. xanthographa* (2), *A. flammatrix* (1), *A. constanti* (1), *A. decora* (1), *A. tritici* (10); I took a specimen of this last, at sugar, on Sept. 4th; *A. aquilina* (1), *A. crassa* (4), *A. clavis* = *segetum* (1); *Neuronia popularis* (9); *Mamestra brassicæ* (1); *Episema glaucina* (11), *E. glaucina* v. *trimacula* = *dentimacula* (1), *E. glaucina* v. *unicolor* (3); *Aporophylla lutulenta* (7); *Polia venusta* (3), *P. canescens* (9), *P. chi* (1), *P. xanthomista* (5); *Apamea testacea* (15), *A. dumerili* (11), one was small and dark; *Luperina matura* = *texta* (5) two being taken, at sugar, on Sept. 4th; *L. virens* (1); *Hadena ochroleuca* (9); *Leucania conigera* (1), *L. albipuncta* (11); *Caradrina hospes*, a rarity (1); *Anchocelis lunosa* (2); *Orthosia litura*, one bred, on Sept. 26th, from a pupa found at the foot of a poplar six days previously. I now come to two very interesting specimens, which Dr. Hofmann considers to be referable to the genus *Orthosia*, being "either a very peculiar variety of one of its species, or perhaps an entirely new one;" but Dr. Staudinger "thinks it to be a peculiar aberration of *Tæniocampa munda*." One of these specimens was taken on the trunk of an elm, on Oct. 5th; it is of a yellowish grey colour, and the tip of the left fore wing is missing; the other is in good preservation, expands 1½ in., and is somewhat more reddish.

It was also found on an elm, Sept. 19th.\* *Cerastis* (= *Orrhodia*) *rubiginea*, one bred on Sept. 28th, from a chrysalis found the day before, under a stone; *Plusia gamma*, common; *Hypena obesalis* (1); *Acidalia contiguata* (1); *Boarmia occitanaria* (2), *B. consortaria*, a variety (6); *Gnophos obscuraria*, a somewhat light variety (4); *Phasiane scutularia* (7); *Enconista agaritharia* (3); *Ortholitha cervinata* (1), *O. mœniata* (1); *Lygris prunata* (2), flying among rocks, and plunging into the shrubs and herbage; *Cidaria galiata* (3), *C. frustata* (3).—F. BROMILOW; Nice, Alpes-Maritimes, France, Feb. 16th, 1894.

LEPIDOPTERA OBSERVED IN EASTER WEEK, 1894.—On Easter Monday last, whilst walking from Northwood to Rickmansworth, through Moor Park, we saw two hibernated specimens of *Vanessa polychloros*, also hibernated specimens of *V. urticæ*, *V. io*, and *Gonopteryx rhamni*. On palings we found *Anticlea badiata* and *Hybernia progemmaria*. The place where we saw *V. polychloros* must have been just on the borders of Middlesex and Herts, in which county actually I do not know. Is this species included in the list of Middlesex Rhopalocera? On the following day, at Weybridge (St. George's Hill), we captured a fine series of *Brephos parthenias*, two very worn examples of *Trachea piniperda* on pine trunks, one *V. polychloros*, and some very worn specimens of *H. progemmaria*. This morning one *Asphalia ridens* was bred from larvæ taken at Berkhamstead last season.—GEORGE E. BERGMAN; 29, Priory Road, Kilburn, N.W., April 8th, 1894. [Mr. Cockerell included *V. polychloros* in his "Preliminary List of the Insect-Fauna of Middlesex" (*vide* Entom. xxiv. p. 31).—ED.]

REMARKS ON THE EARLY SEASON AND ON "ASSEMBLING."—I think the present season is earlier than last. I saw *Pieris rapæ* here on March 25th, several *Pararge egeria* in Dorsetshire on March 31st, and *Ligdia adustata* (2) here this evening. I have been trying "assembling" lately with *Brephos parthenias* and *Amphidasys strataria* (*prodromaria*). With the first-named I had no success, but of the latter I took about fifteen males on March 21st, and six on another evening shortly after that date; on each occasion the time was between 9 and 10 p.m., and the specimens captured were in good condition.—W. M. CHRISTY; Watergate, Emsworth, Hants, April 5th, 1894.

NYSSIA HISPIDARIA IN GLOUCESTERSHIRE.—Not being able to find any note of the occurrence of *N. hispidaria* in this county, let me record the capture of twenty males and five females in the Forest of Dean, between Feb. 3rd and March 11th, all at rest on oak trunks. Assembling proved a failure, but the females all paired with captured males, and all deposited ova. This moth seems to emerge rather late in the afternoon; eight out of the twenty were drying their wings when found; time, between 4 and 5 p.m. Last year I diligently searched the trees in the same locality several times, but, probably owing to my visits having been made too early in the day, took one specimen only.—N. F. SEARANCE; Mitcheldean, Gloucester.

\* [We are indebted to Mr. Bromilow for sending us these interesting specimens for examination, and believe that we may congratulate him on the discovery of a new species nearly allied to *Tæniocampa munda*.—ED.]



EARLY APPEARANCE OF *LYCÆNA ARGIOLOUS* AND *PARARGE EGERIA*.—On March 26th I captured a very fine specimen of *L. argiolus*. It had evidently only just emerged, and was flying round a *Cedrus deodora* in front of this house. The "azure blue" is a common butterfly in the woods of Curraghmore, the demesne of the Marquis of Waterford, in my parish. It occurs regularly every spring, but some years it is far more plentiful than in others. I have often looked for it during the summer months, but it does not make a second appearance here. I saw a specimen of *P. egeria* in my garden on the 8th of this month. These two dates are the earliest respectively on which I have seen these butterflies.—(Rev.) WILLIAM W. FLEMING; Coolfin, Portlaw, Co. Waterford, April 10th, 1894.

EARLY APPEARANCE OF *LYCÆNA ARGIOLOUS*.—On Saturday afternoon, April 7th, I captured a freshly-emerged female *L. argiolus*, flying round a variegated holly in the garden. Can anyone give an earlier date for the appearance of this insect?—H. W. SHEPHEARD WALWYN; Bidborough, near Tunbridge Wells.

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### RECENT LITERATURE.

*Transactions of the City of London Entomological and Natural History Society for the year 1893*, pp. 59, xxii. The London Institution, Finsbury Circus.

AMONG various other matters of interest which form the contents of this modest little publication are some excellent papers, which are well worth the attention of those entomologists who may not yet have read them in the journals in which they were originally published. Dr. Buckell's learned dissertation on "Specific Nomenclature—Past, Present, and Future," and instructive essay entitled "The History of Butterfly Classification," will be of great value to the student seeking knowledge on these matters. Mr. Robson's paper, "Is Moisture the Cause of Melanism?" is interesting, and a useful contribution; whilst Mr. Tutt's diatribe "Melanchroism in British Lepidoptera" is characteristic but not convincing. Coleopterists will be interested in "Notes on certain Coleopterous Insects found in City Warehouses," by Mr. G. A. Lewcock; and "The genus *Silpha*, Linné," by the Rev. W. F. Johnson.

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*Chinese Central Asia: a Ride to Little Tibet.* By HENRY LANSDELL, D.D., M.R.A.S., F.R.G.S., Author of 'Through Siberia,' 'Russian Central Asia,' 'Through Central Asia,' &c. With 8 maps and 80 illustrations. London: Sampson Low, Marston & Co., Ltd. 1883.

AN interesting narrative of the more important portion of Dr. Lansdell's third great journey of 50,000 miles, during which he visited every kingdom of Asia, five of Europe, and four of Africa. Although the traveller's primary objects were missionary, he did not neglect science; and the Appendix to the second volume contains an important list of the Lepidoptera of Chinese Turkistan, compiled by Mr. Bethune-Baker, partly from German and Russian sources.

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## VARIETIES OF *ARGYNNIS EUPHROSYNE* AND *A. AGLAIA*.

BY RICHARD SOUTH.



*Argynnis euphrosyne*, vars.

FIGURE 1.—Female, captured in a Kentish wood, June, 1890.

Ground colour typical. Fore wings have the discoidal cell almost entirely filled up with black, and there is a quadrate spot of the same colour below it; the spots forming the central series are large and united; submarginal series of spots typical, but the marginal markings are somewhat similar in character to those of female *A. selene*. Under surface almost typical, except that the discal black markings of fore wings are very large.

A very similar aberration of the male was taken in the same wood about 1879. The chief differences between these two speci-



mens, which are both in my collection, is that in the latter the nervules on marginal area of both wings are broadly black.

FIGURE 2.—Female, taken at West Wickham, May, 1887.

All the wings are of the typical ground colour, but suffused with black as far as the central band; on the outer third, especially of the hind wings, the round black spots of inner series are united with the triangular spots beyond, and these last are more or less connected with the marginal spots. On the under surface the marginal silver spots of hind wings are very large, and the upper ones are capped with bright chestnut; some of the reddish marks on basal area are replaced by pale buff.

In the collection of Mr. Frohawk, who captured the specimen.

FIGURE 3.—Male, taken in Epping Forest, May, 1889.

Fore wings do not exhibit any striking difference from the type, but the hind wings are more heavily marked with black; the usual fulvous ground colour only appearing as a marginal series of round spots, an inner series of suffused spots with black centres, and some ill-defined marks internal to the central band; the abdominal area is clothed with silky bright fulvous hairs. Under surface of fore wings typical: of hind wings pale buff; the silver discoidal spot is continued almost to fourth spot of marginal series, all of these marginal spots are large, and bordered and edged with reddish; the basal silver spot is distinct, and there are indistinct traces of the usual reddish marks on basal area.

In Mr. W. J. Mead's collection.

The markings on under surface of the hind wings of this specimen are very similar to those of an example taken by Mr. Baynes in Lancashire last year, and figured on page 1 of the present volume.



*Argynnis aglaia*, var.

The above figure represents the variety of *Argynnis aglaia* described by Mr. Fowler (*ante*, p. 131). In the blotched character of the silver markings on the under surface of hind wings this

specimen is somewhat similar to the variety of the species known as *charlotta*, and referred to by Westwood and Humphreys as follows:—

“*Pap. charlotta* of Haworth (Lep. Brit., p. 32; Sowerby, Brit. Misc., pl. 11; Bree in Loudon's Mag. of Nat. Hist., v., 150: *Arg. charlotta*, Jermyn), represented in our plate 12, figs. 1–2, is regarded by Stephens and Curtis as a var. of this species (*A. aglaia*), differing from it in having two of the costal spots on both sides of the fore wings united, and only nineteen instead of twenty-one silvery spots on the under side of the hind wings, several of the ordinary spots at the base being confluent.”

## ON SOME BUTTERFLIES OCCURRING IN THE GOVERNMENT OF ST. PETERSBURG.

BY BORIS M. MENSHOOTKIN.

In the ‘Entomologist’ for January last (*ante*, p. 1) Mr. South figures and describes a variety of *Argynnis euphrosyne*, and it may therefore be interesting to record a similar variety of *A. selene* taken by myself in the Government of St. Petersburg. On the upper surface the fore wings are of the same brown colour as in typical *A. selene*, but tinged with grey-brown at the base; the discoidal cell has two yellow-centred black spots, one at the outer end and one some three millimetres from it, but not quite in the middle of the cell; the submarginal area in the lowest part has three distinct spots, of which the first two are elongated and have the appearance of arrow-heads, the others are merged together and indistinct; the marginal line is black, with black dots on the nervules uniting in the upper part with the submarginal line, and enclosing spots of yellow between the nervules. Hind wings: basal area almost wholly black, the centre is clothed with black hairs, and all the nervules are black, some broad and diffuse, others finer and sharper; between them is a row of black spots uniting with the nervules, and giving the appearance of a black transverse band. Under surface similar in many respects to that of typical *A. selene*, but there are no black patches on the outer margin of fore wings; on the nervules the yellow deepens only to greyish brown, and slight yellowish grey patches are seen on the submarginal row of dots; the marginal line itself is black, very thin and distinct: hind wings have the nervules very sharply defined; the outer marginal area looks faded, and there are little patches of brown on the nervules forming a submarginal band interrupted in the middle.

So far as I know, this form of *A. selene* has not been previously described; it appears to be very local, and certainly has



not been caught here for the last five or six years. I have examined many collections of butterflies, but have only seen one other example of this variety, which was taken near Gatchina in 1888, the same year that I took the example described above at our country residence some fifteen versts (about ten miles) south from the town Louga, and not more than sixty or seventy versts (about forty-five or fifty miles) from Gatchina. My specimen has been presented to the zoological collection of the Imperial University of St. Petersburg, where a complete collection of butterflies of our Government is now formed by a number of students of the University. A list of all the Lepidoptera in this collection will shortly be published.

I should also like to record the occurrence of two other species of Rhopalocera in the Government of St. Petersburg, *i. e.*, *Parnassius mnemosyne* and *Polyommatus dispar* var. *utilus*. The former of these two butterflies is widely spread over Russia. Beginning from Finland, it goes down the Volga. Almost all collections from St. Petersburg contain some specimens of this species, but it is nevertheless very local, and is generally found on high river-banks. For instance, in the neighbourhood of Louga there are only three or four places where it is to be found, each year about the 1st of June. From a distance this butterfly may be easily mistaken for *Aporia crataegi*, which is very plentiful with us, and appears about the same time of the year.

The other butterfly, *Polyommatus rutilus*, was caught by myself for the first time in the Government of St. Petersburg, on our estate near Louga, on the 12th of July, 1892. This interesting specimen I have also handed over to the collection of the University.

I may mention that the following species of Lepidoptera, all of which were found by me, have been also added to the fauna list of St. Petersburg within the last three years:—*Apatura iris*, *Macroglossa stellatarum*, *Spilosoma luctifera*, and *Brotolomia meticulosa*. The first of these, *Apatura iris*, was caught once in 1837, if I remember rightly, but since then supposed to be extinct in St. Petersburg. In the year 1890, towards the end of June, a great number of this species appeared on our estate, but nowhere else; my best specimens are in the University collection. *Pieris daphidice* occurred in 1892 all over the Government, but until this it had never been observed with us. It was as plentiful as *Pieris brassicae* and *P. rapae* usually are.

St. Petersburg University, Jan. 30, 1894.

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## THE NEW ENTOMOLOGY.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

MR. SHARP'S address on this subject, which has fortunately been given a wider publicity in these pages than the Proceedings of the Society to which it was delivered would have secured, needs no such apology as that with which it concludes. A purview of recent additions to our lists of species has doubtless much interest, but Mr. Sharp's concise review of the field for scientific speculation offered by Entomology is of much weightier import, and as such will be welcomed. The complex nature of zoological enquiries inevitably gives rise to diversified speculations, many of which may fade in the light of further accumulations of evidence; but the converging rays contributed by researches into biological phenomena in various departments of the science must eventually lead to important results. Investigations into the morphology of insects offer, as the writer points out, peculiar opportunities for experimental research; and although Palæontology has of course preserved more scanty and fragmentary testimony with regard to the evolution and ontogeny of insects than of most other classes, yet the modern phenomena of variation which they display so widely are so capable of examination that ere long we may hope this favourite study will furnish valuable clues to some secrets of Nature. The thickness and wide areas of extension of geological formations witness to enormous epochs, not more trenchantly than the persistence, even to the present date, of characters presumably impressed on certain races of plants and insects during the lapse of the glacial ages; though surviving in latitudes and situations wholly differing for thousands of years past in climatal and other environment. But, on the other hand, there are species of Lepidoptera which appear to be in a most unstable condition; and some are apparently rapidly conforming under our eyes to changed conditions of environment under stress of natural selection and heredity.

These two classes of phenomena seem to challenge solution by the followers of the two schools of philosophical speculation represented by Mr. Herbert Spencer and Professor Weismann respectively. An instance of the persistence of acquired characters under change of environment is afforded by the occurrence in Scotland and Ireland of the alpine variety *montivaga* of *Acronycta euphorbiæ*. It is generally believed to have acquired its varietal traits during the glacial epochs, and transmitted them through its descendants who settled in these islands before they were insulated from the European mainland. But while it is explicable enough that the variety still persists on the Alps under approximate subarctic conditions, while the type prevails in the lowlands,



how comes it that even in the South of Ireland, with a climate more southern than its latitude represents, no reversion to the type has taken place in the lapse of cycles of centuries? The variation acquired under pressure of the environment has apparently so impressed itself on the organism that succeeding ages of pre-glacial climate have not erased the hereditary traits.

The phenomenon probably would not have been displayed if isolation had not segregated the variety in these islands from admixture with the lowland continental type. It is of course, however, open to discussion whether the alpine form or the so-called type is the more primitive one. In either case, however, we seem to have an instance of the persistence of acquired characters. On the other hand, as above remarked, melanic variations are credibly asserted to be rapidly developing in smoky districts. These and similar facts require careful investigation, and students of such phenomena should carefully try to distinguish what appears to be a hereditary and constitutional bias, giving rise (often sporadically) to fixed types of variation, whether sexual or otherwise, such as the var. *valesina* of *Argynnis paphia*, and the named ones of *Apamea oclea*, from such occasional topomorphic forms whose origin may be traced to local influences.

In referring, however, to the views of Professor Weismann and Mr. Herbert Spencer, Mr. Sharp gives a very inadequate and therefore misleading analysis of the theories under discussion lately in the 'Contemporary Review.' Inadvertently, doubtless, he summarises the German biologist's thesis thus baldly:—"All specialized forms are the result of the pressure of the environment acting through heredity"; while "acquired variations are not transmitted." It seems unfortunate that so incomplete a definition of the very abstruse speculations of the celebrated author should have been put forward without qualification or explanation. To a reader ignorant of the subject, it seems a contradiction of terms to speak of heritable varieties, if variations are not transmissible. Of course Mr. Sharp's reference to the subject is a merely passing one, but it conveys an inaccurate impression of the real issue. Professor Weismann, whose essay is styled "The All-sufficiency of Natural Selection," contends that modifications of structure arise from fortuitous variations of germinal products, uninfluenced either by the action of the environment, or by functional use or disuse, but springing solely from constitutional tendencies of the parents not immediately referable to any assignable stress of external influences. These chance variations of offspring are pruned by natural selection, which secures the survival of the fittest. The English philosopher, on the other hand, contends in favour of the Lamarckian principle of the heritability of variations arising

from use and disuse of functional attributes, as well as from external influences; and he shows that in the social Hymenoptera one set of differences in structure and instinct is determined by nutrition before the egg is laid, and a further set by nutrition after the egg is laid. And further, from the partial and in other cases total abortion of the hind limbs of whales, towards which result no defect of nutrition can be alleged as cause, he argues that Professor Weismann's theory of "panmixia" affected by selection is inadequate to account for more than the partial suppression of the hind limbs of cetaceans, but that it must be the result of the disuse of those appendages, together with the inheritance of characters so acquired.

The modern school of entomologists generally appears to lean strongly towards the latter school of thought, often perhaps overshooting the mark by referring all variations to the immediate action of present environment. It seems probable that if more attention were paid to insular fauna, some of these problems might find solution.

A more careful and accurate study of Irish insects, for instance, seems most advisable. Mr. Nicholson's thoughtful and valuable paper on Corsican butterflies, which follows that of Mr. Sharp (p. 116), is very suggestive in this respect. *Ex. gr.*, it would be interesting to learn if the phenomena of *Vanessa urticae* var. *ichnusa* being restricted to a single brood in a climate possessing a summer of so long duration may be accounted for by the fact that the food plant is well known to be scorched very early in the year by the powerful sun of Corsica. Also whether the species is perpetuated by the long-lived female imagines surviving the whole summer (perhaps aestivating?) and winter, or whether a portion of the pupæ are delayed in emergence.

That the larvæ are to be found through a considerable period (*teste* Mr. Nicholson) is probably due to the insufficient nutriment afforded by the withering food plant, as well as by its irregular survival in moist and shaded spots. These observations bear out Mr. Sharp's remarks as to the necessity in future of restricting somewhat the scope of individual labours in the entomological field. To solve such problems as have been alluded to, we require the aid of patient and continuous investigation into the particular facts of each case; and there is ample witness of the increase of scientific students who are contented to limit their enquiries to special groups of phenomena. To such all honour is due.

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# A NEW CLASSIFICATION OF THE GENUS *THORACANTHA*, LATR.

BY JOHN W. SHIPP.

As the genus *Thoracantha* is in a great state of confusion, and as so many species generically distinct are all included under this most interesting genus, I have been induced to give a new classification, dividing the existing species under new genera, as follows:—

- I. Species having the head tuberculated . . . ISOMERALA, n. g.
- II. Species having the head simple.
  - A. Scutellum as long as abdomen, the scutellary projection being very broad, as wide as thorax at the base, and with the apex divided.
    - a. Thorax not pubescent, apex of the scutellary projection very sharply cleft or notched . THORACANTHA, Latr.
    - b. Thorax pubescent; apex of the scutellary projection rounded and not sharply cleft, the notch extending two-thirds of the entire length . . . . . DILOCANTHA, n. g.
  - B. Scutellary projections as wide as thorax at base, each side being produced into a long contiguous spine, tapering at extremity, and generally longer than abdomen.
    - a. Head not so wide as thorax; eyes normal . LASIONYCUS, n. g.
    - b. Head as wide as or wider than thorax; eyes distinctly projecting.
      - aa. Third joint of the antennæ longer than all the others together; antennæ ten-jointed . . . . . LIBATA, Cameron.
      - bb. Third joint of antennæ not much longer than the fourth; antennæ eleven-jointed . KAPALA, Cam.
  - C. Scutellary projection with the basal portion as wide as thorax, shortly compressed in centre, then dilated, and the apex furnished with two rounded short spines . LÆTOCANTHA, n. g.
  - D. Scutellary projection with the basal portion as wide as thorax, produced, and with the sides parallel. The apex is furnished with a small semicircular excavation, the apices of the two spines being very sharp . ACROSTELA, n. g.

ISOMERALA, mihi.

*coronata* (type), Westw., Thes. Ent. p. 154, pl. xxviii. f. 10.  
Hab. Bahia, Amazons.

THORACANTHA, Latr.

Cuvier's Règne Anim. ed. 2, v. p. 297.

*Galearia*, Brullé, Spec. Hym. iv. p. 592.

*latreillei* (type), Guérin, Icon. Règne Anim. Ins. p. 415, pl. lxxvii. f. 8; Walker, Ann. Mag. Nat. Hist. xii. 1843, p. 45; vel *coleopteroides*, Waterh., Trans. Ent. Soc. ii. p. 196, pl. xvii. f. 3.

*violacea*, Brullé, Spec. Hym. iv. pl. xxxviii. fig. 6, 6a-b.

Hab. Brazil.

DILLOCANTHA, mihi.

*flavicornis* (type), Walker, Trans. Ent. Soc. (3), 1862, i. p. 382; Westw., Thes. Ent. p. 153, pl. xxviii. fig. 4, 4a-b.

Hab. Villa Nova, Brazil. (Type in B. M.)

LASIONYCHUS, mihi.

*flabellata* (type), Westw., Proc. Zool. Soc. 1835, p. 52.

*aculeata*, Blanch., Cuv. Règne Anim. ed. Croch. Ins. p. cxiii. f. 8; Westw., Thes. Ent. p. 154, pl. xxviii. fig. 9.

Hab. Amazons. Brazil. (Type in Mus. Oxon.)

LIRATA, Cameron.

Bio. Centr. Amer. Hym. i. p. 102.

*striatissimus* (type), Walker, Trans. Ent. Soc. (3), 1862, i. p. 380.

*luteogaster*, Cam. (*flaviventris*, Cam. err. l. c.), Bio. Centr. Amer.

Hym. i. p. 102, pl. v. figs. 16, 16a.

Hab. Panama.

KAPALA, Cameron.

Bio. Centr. Amer. Hym. i. p. 102.

*Chirocerus*, Brullé (nec Latr.), Ins. Hym. iv. p. 571.

*furcata* (type), S. Fabr., Syst. Piez. p. 158; Haliday, Ent. i. pl. P, figs. 22a-c; Cameron, Bio. Centr. Amer. Hym. i. p. 103, pl. v. figs. 17, 17a-d.

Hab. South and Central America.

LÆTOCANTHA, mihi.

*nasua* (type), Walker, List Hym. in B. M. i. 1846, p. 88.

Hab. Brazil. (Type in B. M.)

ACROSTELA, mihi.

*apta* (type), Walker, Trans. Ent. Soc. (3), 1862, i. p. 384; Westwood, Thes. Ent. p. 153, pl. xxviii. f. 3.

Hab. Sahtarem, Villa Nova. (Types in B. M. and Mus. Oxon.)

*Thoracantha pallescens*, Walker (Trans. Ent. Soc. (3), 1862, i. p. 379), and *T. surgens*, Walker (l. c. p. 384), will have to be referred to *Lirata*, Cameron.



The figures of *Lirata luteogaster*, Cameron (*striatissimus*), in the *Biologia Centrali-Americana*, Hym. i. pl. v. figs. 16, 16a, are slightly misleading. The basal portion of the antennæ is yellowish, in some examples a bright yellow. Although I have not seen a specimen of *Uromelia striata*, Perty, I should think it probable that the apex of the scutellary projection is notched or divided. If so, it will in all probability be identical with *Thoracantha aculeata (flabellata)*, Westwood.

Oxford, 1894.

## SIX YEARS' ENTOMOLOGY IN CO. GALWAY.

BY THE HON. R. E. DILLON.

(Concluded from p. 171.)

*Euclidia glyphica*. Common.

*Epione parallellaria*. Two specimens, bred, June, 1892.—*A. apiciaria*. Several specimens taken by Mr. Kane, at sugar and flying, July, 1893.

*Venilia macularia*. Several specimens taken round apple trees in the garden.

*Angerona prunaria*. Common. I have bred many from larvæ found on bramble. Pale varieties as common as the typical form.

*Ellopiæ prosapiaria*. I have only two good specimens, but have netted several very worn examples in August.

*Eurymene dolobraria*. Fairly common; larvæ very common, except in 1893. I took about a dozen imagines in moth-trap, May, 1893.

*Pericallia syringaria*. Two specimens: (1) July, 1891; (2) June, 1893.

*Selenia lunaria*. Two, April, 1891, at light.—*S. tetralunaria*. Several specimens, at different times from 1890–1893.

*Eugonia fuscantaria*. Fairly common.—*E. erosaria*. Four specimens.—*E. quercinaria*. Not uncommon.

*Nyssia zonaria*. A female having emerged in my breeding-cage, August 19th, 1891, I took her in a box where the larva had been found. On returning within an hour I found a male adhering to the box; delighted at my capture I prepared them for my cabinet, never thinking even of breeding from them.

*Biston hirtaria*. Two specimens, on the window of a staircase, attracted by a lamp within; one almost totally destroyed by burning and oil.

*Amphidasys strataria*. Fairly common, on windows and in moth-trap.—*A. betularia*. Common,

*Boarmia cinctaria*. Two specimens.

*Tephrosia punctularia*. One specimen. Mr. Kane took a remarkable form here, April 7th, 1893.

*Gnophos obscuraria*. Several specimens at different times.

*Geometra papilionaria*. Not uncommon.

*Hemitea strigata*. One specimen, flying on the brow of a bog.

*Zonosoma orbicularia*. I have taken about a dozen, both flying in daytime and at dusk; four in 1893.—*Z. pendularia*. The only specimen taken was netted by Mr. J. V. Hart, Q.C., in July, 1893.

*Hyria muricata*. In all eight specimens have been taken here: two on a larch tree, within fifteen yards of the house; three in June, 1893, by the gamekeeper on the bog; the rest by the ladies of the family, who have always kindly set insects for me in my absence.

*Venusia cambrica*. One specimen.

*Acidalia dimidiata*, *A. virgularia*, *A. subsericeata*, *A. immutata*, *A. fumata*, *A. remutata*. Single specimens of each. I could not identify these and other Geometers; Mr. Kane determined them.—*A. aversata*. Common. Several specimens tend towards the Scotch form.

*Timandra amataria*. Not common; two or three seen yearly.

*Bapta temerata*. Not uncommon; I took about a dozen in the spring of 1893.

*Macaria liturata*. Very common in fir woods on the estate.

*Panagra petraria*. Not uncommon.

*Selidosema ericetaria*. Only one specimen, on a bog near the river.

*Scodiona belgiana*. One specimen in the moth-trap, May, 1893.

*Abraxas sylvata*. One specimen, at sugar, 1892.

*Hybernia defoliaria*. Not uncommon.

*Cheimatobia boreata*. I have just received two specimens from Mr. Kane, which he identified for me. I had previously sent him several examples of *C. brumata*, which I had considered "*boreata*."

*Oporabia filigrammaria*. One specimen, at light.

*Larentia salicata*. Two specimens taken before 1892; these were not identified until Mr. Kane's visit in April, 1893.—*L. olivata*. One specimen flying at dusk.

*Emmelesia alchemillata*. One specimen.—*E. albulata*. Not uncommon.

*Eupithecia pulchellata*. Two specimens.—*E. isogrammata*. One specimen.—*E. virgaureata*. Two specimens.—*E. fraxinata*. One specimen.—*E. indigata*. Several specimens.—*E. debiliata*. One specimen.

*Lobophora halterata*. Two specimens.—*L. carpinata*. Not uncommon.—*L. sexualisata*. Two, July, 1893.

*Thera juniperata*. Moth-trap, August, 1893.—*T. simulata*. Also in moth-trap.

*Hypsipetes ruberata*. One specimen, June, 1893.—*H. trifasciata*. One specimen.

*Melanthia bicolorata*. Common.—*M. albicillata*. Not uncommon.  
*M. hastata*. Two specimens; not uncommon.

*Melanippe unangulata*. Four specimens netted, August, 1893.

*Coremia munitata*. One specimen.—*C. designata*. Common.

*Campptogramma fluviata*. August, 1893.

*Phibalapteryx vitalbata*.—One specimen, taken flying round a turret of the old Clonbrock Castle, where *Clematis vitalba* grows commonly. June, 1893.

*Triphosa dubitata*. Only two good specimens. I have taken worn ones at different times.

*Tanagra atrata*. Not common; one or two seen yearly.



## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, Ph.D., F.L.S., &amp;c.

(Continued from p. 49.)

*ERCHEIA, Walk.*

To this genus belong *Achæa synnoides*, *Sypna complicata*, *Achæa subsignata*, *Ercheia umbrosa* and *charon* (which may possibly not be distinct from *E. dubia*), *Achæa cyllaria*, and *Ercheia diversipennis*.

*Ercheia cyllaria.*

*Phalæna cyllaria*, Cramer, Pap. Exot. iii. p. 100, pl. celi., figs. c, d.

*Achæa cyllota*, Guenée, Noct. iii. p. 248, n. 1669 (1852).

*A. fusifera*, Walker, Lep. Het. xiv. p. 1398, n. 16 (1857).

*A. signivitta*, Walker, l. c., n. 17 (1857).

*A. polychroma*, Walker, l. c., p. 1400, n. 21 (1857).

*Ercheia tenebrosa*, Moore, Proc. Zool. Soc. 1867, p. 66.

Moulmein, Ceylon, Andamans, Nilgiris, N. W. Himalayas, Darjiling, Borneo. In Coll. B. M.

The extreme variability of the upper surface of the primaries in this genus is now well known; the spotting of the secondaries above and the pattern of the under surface can alone be relied upon.

*Ercheia diversipennis.*

*Ercheia diversipennis*, Walker, Lep. Het. xiii. p. 1108 (1857).

*E. pannosa*, Moore, Proc. Zool. Soc. 1883, p. 24.

*E. zura*, Swinhoe, Proc. Zool. Soc. 1885, p. 465.

*E. zygia*, Swinhoe, l. c.

Nilgiris, Bombay, Poona, Canara, Ceylon. Type in Coll. B. M.

This species varies much in the same way as the preceding, from which the pattern of the secondaries is the chief distinguishing character, the three white spots across the centre being more or less united into a band. Whether this distinction can be maintained when long series of both forms have been received, remains to be proved. At present, *E. diversipennis* holds its own as a fairly distinct form from *E. cyllaria*. The forms associated above differ only in the pattern of the primaries, which is undoubtedly as variable as in the other species of the genus.

*OPHIODES, Guen.**Ophiodes mejanesi.*

*Ophiodes mejanesi*, Guenée, Noct. iii. p. 232, n. 1641 (1852).

*Ophisma expedita*, Walker, Lep. Het. xiv. p. 1375, n. 15 (1857).

Var. *Ophiusa tumidilinea*, Walker, *l. c.*, p. 1433, n. 32 (1857).  
Africa and India. In Coll. B. M.

*O. hopei*, Boisduval, from Madagascar, if distinct, must be a very closely allied species to the above.

*Ophiodes selenaris.*

*Ophiodes selenaris*, Guenée, Noct. iii. p. 232, n. 1640 (1852).

*Ophiusa* ? *obhærens*, Walker, Lep. Het. xiv. p. 1830 (1858).

South Africa. In Coll. B. M.

*Ophiodes finifascia.*

*Nephelodes finifascia*, Walker, Lep. Het. xv. p. 1676 (1858).

*Anua amplior*, Walker, *l. c.*, p. 1789 (1858).

*Ophiusa dilecta*, Walker, *l. c.*, Suppl. 3, p. 967 (1865).

South and West Africa. Types in Coll. B. M.

*Ophiodes tirhaca.*

*Phalæna tirhaca*, Cramer, Pap. Exot. ii. pl. clxxii., fig. E (1779).

*Noctua tyrhæa*, Fabricius, Sp. Ins. ii. p. 213, n. 19.

*N. vesta*, Esper, Eur. Schmett. iv. pl. cxli., fig. 1.

*Ophiodes hottentota*, Guenée, Noct. iii. p. 229, n. 1635 (1852).

*O. separans*, Walker, Lep. Het. xiv. p. 1357, n. 9 (1857).

Europe, Asia, South Africa, Madagascar. In Coll. B. M.

Fabricius' blunder in quoting Cramer's name has been copied with slight variations up to the present time. The absurdity of separating the sports of this species under different names is evident directly that one obtains a good series of specimens.

*Ophiodes klugii.*

*Ophiusa klugii*, Boisduval, Faune Ent. de Madag. p. 103, n. 5; Maillard, Notes sur l'Île de la Réunion, pl. xxiii., fig. 1 (as *Ophisma klugii*).

*Ophisma rivularis*, Butler, Ann. & Mag. Nat. Hist. p. 407, n. 82, note (December, 1875).

Western Africa. In Coll. B. M.

LAGOPTERA, Guen.

*Lagoptera juno.*

*Noctua juno*, Dalman, Anal. Entom. p. 52, n. 29 (1823).

*Ophiusa elegans*, Van der Hoeven, Léop. Nov. pl. 5, figs. 6a, b.

*Lagoptera multicolor*, Guenée, Noct. iii. p. 226, n. 1631.

Japan, China, and India. In Coll. B. M

(To be continued.)



ON THE LARVA OF *TRITOMA* (*CYRTO-TRIPLAX*)  
*BIPUSTULATA*, FAB.

BY THE REV. H. S. GORHAM, F.Z.S., &c.

ON the 10th of May in the present year, I found a colony of *Tritoma bipustulata*, Fab., together with a number of larvæ which I believe to be those of the *Tritoma*, though I have not yet reared any. I believe the larva of this insect has not been described, and I will therefore give a short description of these larvæ. Length from 7 to 8 mm., rather fat, whitish, the head brown, and each of the twelve segments succeeding with a brownish transverse patch, not extending so far as the spiracles, the patches intersected by a narrow dorsal white line. The prothoracic segment, *i. e.*, the first after the head, and the last, with the brown patch wider, and on the last are two reddish tubercles. Feeding on the *Polyporus*, on a stump in which were about twelve mature *Tritomas*. The larva consists of twelve segments and the head, the thoracic legs well developed; the merest rudiments of antennæ exist, consisting apparently of one short thick joint, with a seta.

The Chestnuts, Shirley Warren, May 16th, 1894.

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NOTES AND OBSERVATIONS.

VARIATION OF *TÆNIOCAMPA* *GOETHICA*.—Last month Mr. Rose, of Barnsley, sent me for inspection a very extensive series of *Taniocampa gothica* which he had recently bred from ova deposited by a female sent to him in the spring of 1893, by Mr. Salvage, from Perthshire. All the specimens are larger than usual, and in colour are more uniformly brownish. In some examples the characteristic black mark of typical *gothica* is simply represented by a black bar between the reniform and orbicular stigmata. In other specimens there is a thin continuation under the orbicular, forming an L-shaped mark, whilst in a few examples this mark is only indicated by a black spot between the stigmata and one following the orbicular. In the majority of the specimens, however, the "hebrew character" is hardly darker than the ground colour (var. *gothicina*), and in one or two can scarcely be traced. Altogether this is the most interesting series of *T. gothica* I have yet had the pleasure of seeing.—RICHARD SOUTH.

*ORTHOZIA WITZENMANNI*.—I lately sent two coloured sketches of the two forms of the species resembling *Taniocampa munda* (Entom. 179) through my cousin, to his friend, Herr R. Püngeler, of Rhedyt, Germany, to see if he could throw any additional light on the subject. Herr Püngeler, in his letter of April 21st, says they are undoubtedly specimens of *Orthozia witzenmanni*, Standfus, Mitth. Schweiz. e. 1890, p. 233. He states the author described the species from two males

taken near Digne, Basses-Alpes, that it resembles *Tæniocampa munda*, and can be either reddish or grey.—FRANK BROMILOW; Villa Avalon, St. Maurice, Nice, France, May 6th, 1894.

SWARMING OF *VANESSA POLYCHLOROS*.—Previous to the spring of 1893 *Vanessa polychloros* was comparatively rare in this district, and I had seen but very few. All through from March 14th into April of 1893 the species was very commonly met with in the forest; but during the spring of this year it has been in greater abundance; I have, however, rarely seen it outside the forest. The dates of first and last appearance up to to-day, and the numbers seen, were as follows:—March 11th, wind S.W., fine; two specimens at Linford within a few yards of each other; a female, very bright and in good condition; male rather small. A few at various times up to the 17th, when the wind was N.E., previous night cold, but sky clear and warm sunshine during the day; on this occasion *V. polychloros* was plentiful, though scattered. March 19th, plentiful; I saw nine specimens upon an isolated male willow-bush; one or two were feeding upon the catkins, and two pairs by their well-known movements were evidently about to copulate; a few flew away and settled upon the ground. March 23rd, about a mile west of Boldrewood, in a narrow riding, I came across two fine birch-trees amongst oaks and firs, and upon these birches I saw a large assembly of *V. polychloros*; I counted above twenty-five, and upon the bare branches there were several pairs *in cop.* their dark wings being quite visible; on kicking the trees a number flew off, circled round, and settled again. In this case there were no catkins to feed upon, and I think there is no doubt they were assembled for the purpose of copulating, all their movements indicating it; they did not settle upon the other trees around. 25th, abundant at willow, creeping amongst the upper twigs, and evidently about to oviposit. 29th, still common. April 1st, in lesser numbers, getting worn. April 8th, found a batch of ova upon willow, all of which hatched on the 12th. April 10th, saw several very dilapidated imagines; and on the 19th another batch of ova was found, which I sent to Dr. Chapman; these eggs were just changing to the larval colour. 21st, in the Boldrewood locality, one specimen only, its gay colour quite gone, but flight still vigorous; this was the last specimen seen up to date. In writing the above I have acted upon the kind suggestion of Dr. Chapman that I should do so, as it would seem to be unusual for any of the *Vanessidæ* to be seen swarming during the spring. I did not notice any appearance of this butterfly swarming during the spring of 1893; previous to the last two seasons I had very little experience with this species.—J. HY. FOWLER; Ringwood, April 23rd, 1894.

GREASE IN THE THORAX.—Lepidopterists will feel grateful to Dr. Knaggs for his instructive article entitled "How moth-grease spreads" (*ante*, p. 91). The information there given respecting the cause of greasy thoraces, will prove especially valuable to collectors, and enable them in a great measure to prevent it. Dr. Knaggs has clearly pointed out that the mischief is due to unskilful pinning, and close scrutiny will show that he has "hit the right nail on the head." It is



by no means an easy task to find out the centre of fluffy thoraces like *Biston hirtaria*, *Notodonta (Peridea) trepida*, the Bombycidæ, and such-like, the difficulty being often increased by the bluntness of the black entomological pins with which manufacturers are so good as to supply us, the pin sliding off the hard and slippery thorax into the softer part of juncture with the abdomen. It is certain that the badly made, blunt pins are the cause of much bad pinning. Grease, I am sure, is greatly increased by the use of camphor. For some years I have discarded it, substituting naphthaline, and my specimens have been much freer from the unsightly nuisance in consequence.—JOSEPH ANDERSON, Chichester.

THE ECONOMY OF CERTAIN DIPTERA.—*Macquartia affinis*, Macq., has been bred by Mr. Keys, of Plymouth, from the larvæ of *Chrysomela varians*. *Heteroneura albigana*, Mg., I have bred more than once from little red pupæ found in rotten wood. *Scatopse albitarsis*, Zett., can be bred in numbers from the pith of burdock stems. *Ceratopogon niveipennis*, Mg., can be bred in numbers from the pith of teasel stems. *Tephritis plantaginis*, Hal., is certainly attached to *Aster tripolium*, on which it occurs in numbers.—C. W. DALE; Glanvilles Wootton, April 14th, 1894.

PYRAMEIS GONERILLA KILLED BY FLYCATCHERS.—While collecting, on the 5th of the present month, in Mr. Bullock's garden near Ashburton, I witnessed an event in bird and butterfly life new to me. A large plant of the introduced *Veronica andersoni*, in full flower, growing on the lawn, was a great attraction to numerous insects, especially Diptera and Lepidoptera. On the flowers were several *P. gonerilla*, whose bright colours and graceful motions are always a "thing of beauty" to me. A pair of native flycatchers (*Rhipidara flabillifera*), attracted by the numerous insects, hovered about the bush, occasionally settling among the foliage, and darting out to capture some of the insects as they came to the flowers. We had remained about the bush, netting and bottling Diptera nearly an hour, before we observed the fantails dart at *gonerilla*. Previous to their doing so, we noticed them capturing Diptera, and ineffectually pursuing a pale-coloured species of *Mamestra* of semi-diurnal habits. The first attempt to capture *gonerilla* was unsuccessful. Both butterfly and bird darted swiftly over and around the high bush, and once passed close to my face. I distinctly heard the repeated snapping of the minute bill of the fantail during the chase. After a few minutes' respite and excited twitter among the branches, the fantail darted at a second butterfly. The latter seemed to blunder against the flower, and, unfortunately, was captured by the bird. At the moment of capture I struck lightly at the bird with my net, and the butterfly fluttered down through the foliage and I secured it. On examination I discovered its abdomen to be burst, and its intestines slightly protruding. Entomologists may say, perhaps, that there is nothing remarkable about the occurrence. However, after many years' study in the field of bird and insect life in New Zealand, I can only say that I have not previously seen the graceful little fantails attacking such large insects; nor have I ever previously seen them on the open

plains in summer. Leaving aside the probable cause of their presence here in midsummer, I may add that Sir Walter Buller has fully described the airy evolutions of these birds while "they hawk for invisible flies," on the outskirts of the native bush. There is another phase of the case which I may mention: I have frequently netted numbers of *gonerilla* with irregular notches in both the fore and hind wings. As already stated, I distinctly heard the snapping of the fantail's bill when pursuing the butterfly, and I think there can be little doubt that the notches are occasionally produced by these birds, and perhaps other species.—W. W. SMITH; Ashburton, New Zealand, January, 1894.

"CORK CARPET" VERSUS CORK.—Some of your readers may be able to inform me if there is any objection to "cork carpet" as a substitute for cork, other than its comparative weight, which surely cannot be a very great obstacle against its employment, or we should build our cabinets of a lighter wood than mahogany, and use thinner glass than "flatted sheet" or "British plate." Boxes lined with this material have reached me from correspondents and, so far as I can judge, it appears to be peculiarly adapted for lining cabinet drawers and boxes, as well as for making saddles, for it is very readily shaped by rasp, file, or sand-paper. Its advantages compared with cork are, firstly, that it is much cheaper; secondly, that it does not consist of a number of pieces which have to be fitted together and then smoothed down to level surface; thirdly, that it has neither holes nor hard points; and, fourthly, perhaps, that it is thicker than the cork usually employed, thereby allowing a greater length of pin to be inserted, thus affording a firmer hold. Of course both require to be brushed over with two coats of size before papering. The substance above alluded to is of the "corticine" rather than of the "linoleum" variety of the article.—H. G. KNAGGS; Folkestone, May 8th, 1894.

THE CYANIDE BOTTLE.—The description of the Parisian cyanide bottle on page 177 is very interesting, as it states that a piece is scooped out of the stopper about the size of a florin, and a hole is made through that scoop of the circumference of a threepenny-piece. I feel very interested to understand how a hole the size of a threepenny-piece is made *through* a scoop the size of a florin! It reminds me of the description given in 'Farm Insects,' p. 143, by John Curtis, of *Anthomyia radicum*, in which "the thorax is black, with three darker stripes"! I believe I know what Curtis *meant*, and I believe I understand the *improved* cyanide bottle, but the method of describing is curious in both cases.—G. H. VERRALL; Sussex Lodge, Newmarket, April 30th, 1894.

PATENT POSTAL-BOX WITHOUT PACKING.—In the May number of the 'Entomologist's Monthly Magazine' Dr. H. Guard Knaggs, who has already done so much for the practical as well as for the systematic phase of entomology, has described a new and very secure packing arrangement for the transmission by post of entomological specimens. By an ingenious arrangement of elastic bands, the box containing specimens is suspended in the interior of a larger and stronger one,



and in this way the use of cotton wool, tow, or other kinds of packing material is dispensed with. The inventor has most kindly sent me one of these boxes, in which was suspended a seidlitz-powder box containing two butterflies. The package was despatched from Folkestone by parcel post, and the insects arrived in perfect order.—  
RICHARD SOUTH.

### CAPTURES AND FIELD REPORTS.

ASEMUM STRIATUM, L., IN HAMPSHIRE.—I was surprised to find a fresh specimen of this insect on turning over a chip of a recently-felled Scotch fir, in Lord's Wood, near here, on May 10th. I do not think it has been recorded in England before, and not, so far as I am aware, excepting from Scotland, in the British Isles; but from its distribution in Europe (Gyllenhal giving it for Switzerland; Redtenbacher, Austria; Mulsant, France), it seems remarkable it should not occur more commonly.—  
H. S. GORHAM; Shirley Warren, May 16th.

SPRING LEPIDOPTERA AT TONBRIDGE.—*Pieris brassicae* (?) seen in the distance, March 27th. *P. rapæ*, a male caught on the same day. *Gonopteryx rhamni*, males seen on March 25th, April 8th and 11th, all apparently fresh; why does this butterfly keep its freshness through the winter so much better than others? *Vanessa urticae*, one seen on the wing by V. H. Jackson on January 15th; on March 14th I saw another, and several appeared on Easter Day. *Pararge megæra*: of this I found a larva on March 11th; it pupated on April 3rd. *Dasychira pudibunda* was bred by J. E. Hailstone on January 31st. *Brephos parthenias*, not noticed till March 31st. *Phigalia pedaria*, one found on palings, February 24th. *Hybernina leucophaea* and *H. marginaria* were common on fences throughout February. *Anisopteryx æscularia*, March 2nd. *Anticlea badiata*, April 1st. On April 11th I heard several cuckoos; on the 12th I saw a swallow and *Lycæna argiolus*. On April 13th I went to Salcombe, South Devon; a female *Pararge megæra* was taken on the 14th, and several *P. egeria* appeared on the 16th. On the 17th I came across another collector who had just taken *Pieris napi*, *Euchloë cardamines*, and *Argynnis euphrosyne*. *Polyommatus phlæas* was seen on April 19th, and *Thecla rubi* taken on April 25th. A female *Dicranura vinula* emerged on April 28th, and a larva of *Arctia villica* pupated on April 29th. *Vanessa cardui* was seen on Bolt Tail on April 30th. A larva of *Arctia caia* was found at Salcombe on gorse, where it had presumably been feeding on the young shoots; a larva of *Bombyx quercus* was found crawling over the same plant. Larvæ of *B. trifolii* were extremely common at Starehole Bottom and on Bolt Head; they seem very general feeders; there was no clover of any sort in the locality where they occurred, but several were found eating different grasses; one was seen to nibble bracken, and others were found, though not actually feeding, on heather, bramble, and violet; one was found eating gorse blossom, which had apparently been its food for some time, as it ejected several pieces of yellowish-brown frass. These larvæ are very shy, and on one's approach, which they perceive very easily, they curl up, often writhing to and fro, remaining thus for a considerable time; several were found sitting on rocks, but by far the greater number were stretched out on dead bracken. In confinement they eat various kinds of clover.—D. P. TURNER; 14, Havelock Road, Tonbridge.

SPRING CAPTURES AT FOLKESTONE.—The following notes of rather early appearances may be of interest:—April 1st, *Selenia illunaria*, *Lobophora polycommata*, *Anticlea badiata*; 8th, *Hemerophila abruptaria*, *Phibalapteryx vitalbata* (I believe the time usually given for the appearance of this species is June and July), *Rumia cratægata*; 9th, *Cidaria suffumata*; 10th, *Ematurga atomaria*; 15th, *Phytometra ænea*, *Herbula cespitalis*, *Epichnapteryx pulla*; 18th, *Thecla rubi*, *Lycæna argiolus*, *Nisoniades tages*.—STUART G. HILLS; Folkestone, April 18th, 1894.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—March 28th, 1894.—Henry John Elwes, Esq., F.L.S., President, in the chair. Mr. Percy H. Grimshaw, of 58, Coniston Road, Edinburgh, was elected a Fellow of the Society. Mr. McLachlan announced the sudden death, on the 23rd inst., of Mr. J. Jenner Weir, who joined the Society in 1845, and had been one of its most regular attendants. He also commented on the scientific attainments of the deceased, and his social qualities. Mr. Goss and Mr. Merrifield also spoke of their long friendship with the deceased, and of the respect and esteem which they entertained for his varied knowledge and amiability of disposition. Mr. W. Borrer, jun., exhibited a wasp's nest which had been built in such a way as to conceal the entrance thereto and to protect the whole nest from observation. He believed the nest to be that of *Vespa vulgaris* (cf. Proc. Ent. Soc. London, 1892, pp. xx and xxi). Mr. McLachlan and Mr. Blandford made some remarks on the subject. Mr. G. F. Hampson exhibited a specimen of *Gaudaritis flavata*, Moore, from the Khâsi Hills, and called attention to the existence in the males of this species, in the closely allied British species *Cidaria dotata*, Linn., and also in two Japanese species (*C. agnes*, Butl., and an undescribed species), of an organ on the under side of the fore wing, which he suggested might be for stridulation; this organ consisting of a small scar of hyaline membrane situated just below the middle of vein 2, which is much curved: this scar is fringed with long hair, and has running down its middle a row of sharp spines situated on the aborted remains of vein 1, and which is curved up close to vein 2; the spines would naturally rub against part of the costa of the hind wing, but no spines or unusual roughening seems to exist on that or on any of the veins on the upper side of hind wing against which they could strike; below the scar is situated a large shallow fovea or pit in the membrane, slightly developed in *dotata* and *flavata*, but much more prominently in the two Japanese species, and, should the organ prove to be made for stridulation, would probably act as a sounding-board. Mr. Hampson said that in the Japanese species *C. fixseni* of Brem., exceedingly closely allied to *flavata*, the males have no trace of this organ; and he hoped that entomologists who have an opportunity of observing *dotata* in life would make some experiments on living specimens during the ensuing summer; probably confining males and females together would lead to some results. The President, Prof. E. B. Poulton, Lord Walsingham, and Mr. Hampson took part in the



discussion which ensued. The Rev. T. A. Marshall communicated a paper entitled "A Monograph of the British Braconidæ, Part V." Mons. Louis Péringuey communicated a paper entitled "Descriptions of new Cicindelidæ from Mashunaland." Prof. Poulton gave an account of his recent tour in the United States, and commented on the entomological and other collections contained in the American museums. Lord Walsingham, Mr. Hampson, and the President also made some remarks on the subject.

*April 11th.*—H. J. Elwes, Esq., F.L.S., President, in the chair. Mr. F. W. Jones, of 63, Carlton Hill, St. John's Wood, N.W., and Dr. William Steer Ridding, B.A., M.D., of Buckerell, Honiton, Devon, were elected Fellows of the Society. The Hon. Walter Rothschild exhibited male and female specimens of *Ornithoptera paradisea*, Stdgr., from Finisterre Mountains, New Guinea; *O. trojana*, Stdgr., from Palawan; *O. andromache*, Stdgr., from Kina Balu, Borneo; *Enetus mirabilis*, Rothschild, from Cedar Bay, Queensland; and a few other splendid species from the Upper Amazons. The President, Mr. J. J. Walker, Mr. Osbert Salvin, Lord Walsingham, Col. Lang, R.E., Mr. Champion, and Mr. Hampson made remarks on the geographical distribution of some of the species and the elevation at which they were taken. Mr. H. Goss exhibited, for Mr. G. A. J. Rothney, several specimens of a species of Hemiptera (*Serinetia augur*, Fab.), and of a species of Lepidoptera (*Phauda flammans*, Walk.), the latter of which closely resembled and mimicked the former. He said that Mr. Rothney had found both species abundantly on the roots and trunks of trees in Mysore, in November last, in company with ants (several species of *Camponotus* and *Cremastogaster*). The Hemiptera appeared to be distasteful to the ants, as they were never molested by them, and he thought that the species of Lepidoptera was undoubtedly protected from attack by its close imitation of the Hemipteron. Mr. Goss said he was indebted to Mr. C. J. Gahan for determining the species. A discussion followed on the mimicking species, in which the President, Mr. Waterhouse, Mr. J. J. Walker, Colonel Swinhoe, Mr. Hampson, and others took part. Mr. J. W. Tutt exhibited (1) a typical specimen of *Lycana corydon*, captured in July, 1893; (2) a hybrid male (*L. corydon* and *L. adonis*) taken in copula with a typical female *L. adonis*, May 20th, 1893; (3) a typical male *L. adonis*, May 20th, 1893; (4) a female *L. adonis*, the pigment failing in one hind wing; (5) a pale var. of *L. corydon*, probably to be referred to var. *apennina* of Zeller, usually taken in Italian mountains, or var. *albicans*, H. S., taken in Andalusia. Mr. Tutt remarked that, of the first, Staudinger (Cat. p. 12) says "pallidior," of the latter "albicans." He also remarked that the hybrid retains the external features of the species *corydon*, but has taken on to a great extent the coloration of *L. adonis*. It was captured in copula with a female *L. adonis*, at a time when *L. adonis* was very abundant, and some weeks before *L. corydon* occurred (*vide* Ent. Record, iv. p. 230). The question having been raised by the President as to the number of meetings of the Society which it was desirable to hold during the year, and the most convenient dates for such meetings, a long discussion on the subject ensued, in which Mr. Waterhouse, Mr. Salvin, the Hon. Walter Rothschild, the Rev. T. Wood, Mr. S. Stevens, the Rev. J. S. St. John, and others took part.

May 2nd.—H. J. Elwes, Esq., F.L.S., President, in the chair. Mr. S. Stevens exhibited a specimen of *Argynnis aglaia* var. *charlotta*, taken by the late Rev. James Watson in the New Forest in 1870. Mr. J. A. Clark exhibited a curious variety of *Chelonia caja*, having an extraordinary wedge-shaped marking extending from the outer margin to the base of the left hind wing, and also, on the same wing, a small spot which was brown and white in colour, and had the appearance of having been taken from the fore wing and inserted in the hind wing. The specimen was said to have been taken at Abbots Wood, Sussex, in July, 1892. Prof. E. B. Poulton exhibited living specimens of the larvæ of *Gastropacha quercifolia*, surrounded respectively during the early stages of growth by black twigs and lichen-coloured twigs, the food being the same in both cases. All the larvæ were shown upon a white paper background, but examples of the surrounding twigs which produced the change of colour were shown beside each batch. Mr. Merrifield made some remarks on the subject. Mr. E. Meyrick communicated a paper entitled "On *Pyrallidina* from the Malay Archipelago." Mr. C. J. Gahan read a paper entitled "A Supplemental List of the Longicorn Coleoptera obtained by Mr. J. J. Walker, R.N., during the voyage of H.M.S. 'Penguin.'"—H. Goss & W. W. FOWLER, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—March 22nd, 1894.—E. Step, Esq., President, in the chair. The Rev. J. E. Tarbat, The Common, Weybridge, was elected a member. Mr. South exhibited a long bred series of *Tæniocampa gothica*, L., including many var. *gothicina*, which he had received from Mr. Rose, of Barnsley; all the specimens were large and of a deep red shade; also heads of *Arundo phragmites*, L., from Hampshire, which were infested by a large dipterous larva. Mr. Turner, a long series of *Hybernica leucophæaria*, Schiff., taken this year, including a considerable number of melanistic forms. Mr. Adkin, a series of the same species from the New Forest, the common form among them being the white-banded one. Mr. Auld, a very large recently-bred female specimen of *Ocneria dispar*, L. Mr. Sauzé, a locust (*Ædipoda tartarica*), captured at Brixton among vegetables imported from Italy. Mr. Edwards, a number of reptiles and other zoological specimens, which he had just received from Penang. Several members noted that *Tæniocampa munda*, Esp., *Asphalia flavicornis*, L., *Diurnea fagella*, L., and *Semioscopus avellanella*, Hb., were out.

April 12th.—The President in the chair. The President referred to the great loss the Society had sustained by the death of Mr. J. Jenner Weir, who had always taken such an active interest in its meetings, and a resolution was unanimously adopted that a letter of condolence and sympathy should be sent to Mrs. Weir. Mr. Carpenter exhibited long series of *Hybernica leucophæaria*, Schiff., from Coombe Wood, West Wickham, and the New Forest, showing the typical forms in each place; also ova of *Trachea piniperda*, Panz. Mr. Adkin, for Mr. Billups, the following rare Diptera: *Meigenia majuscula*, from Dulwich, new to Britain; *Sciomyza rufiventris*, from Ireland; *Degeeria pulchella*, bred from *Peronea maccana* by Mr. Adkin; *Urellia eluta*, from Lewisham; and an unknown species of the genus *Phorbia*; also galls of



*Dryophanta divisa* and their maker, with *Synergus albipes*, one of its inquilines, and five parasites, viz., *Mesopolobus fasciventris*, *Syntomaspis caudatus*, *Eupelmus urozonus*, *Decatoma biguttata*, and a Chalcid. Mr. Adkin, a drawer showing series of the genus *Noctua* from various localities, especially *N. glareosa*, Esp., and *N. augur*, Fb.; also on behalf of Miss E. Adkin, a bloom of *Tulipa sylvestris*, from an old chalk-pit in Suffolk. Mr. Moore and Mr. Perks, wood which had been destroyed by Coleoptera. Mr. C. A. Briggs, a number of very striking varieties of *Abraxas grossulariata*, L., similar to those figured in Newman and 'The Young Naturalist,' vol. i. Mr. Jäger, a living *Biston hirtaria*, Clerk., stating that he had met with a considerable number of cripples, all malformed on the right side. Mr. Step, a specimen of the fungus *Morchella esculenta*, L., received from Wootton-under-Edge. A communication was read from Mr. Adye on the early season in the New Forest, Messrs. Step, Adkin, Carpenter, and others taking part in the discussion which followed. The President gave an interesting account of a curious habit of some ducks in killing toads during the breeding season by dexterously slitting their abdomens.

April 26th.—The President in the chair. The Rev. M. Corden Jones and Mr. Francis Fell were elected members. Mr. Dennis exhibited a bred variety of *Pararge egeria*, L., in which all the light markings were much extended. Mr. Routledge, a series of *Miselia oxyacanthæ*, L., taken by Mr. Beaumont. Mr. Auld, a series of *Taniocampa munda*, Esp., with several examples of var. *immaculata*, Stgr., taken at West Wickham; also a series of *T. populeti*, Fb., taken at Westerham. Mr. Enock gave a discourse, "Notes on Common Insects," illustrating it by about fifty slides shown with the oxy-hydrogen lantern. He dealt largely with common pests and their parasites, such as the sycamore aphid, with its numerous enemies; the currant mite; the sawfly of the willow, with the insects which attack its larva; the fly whose larva mines the Marguerite plant; the parasites of the Hessian-fly; and lastly, beautiful examples of the minute fairy-flies, of which he stated he possessed at least 150 species. He laid considerable stress upon the economic side of the subject, and strongly advocated following the example set by the United States government in having an entomological section attached to the Agricultural Department. The information given was the result of original observations, and unobtainable in any book. The admirable manner in which the interesting and peculiar life-histories of these minute creatures were portrayed upon the screen and described, excited the greatest admiration among the large number of members and friends present. After a few remarks from the chairman on the kindness shown by Mr. Enock in coming to both entertain and instruct us, Mr. Barrett proposed and Mr. Auld seconded a hearty vote of thanks to Mr. Enock, which was unanimously passed. In reply, Mr. Enock said that at present he saw no chance of either the farmers or the government taking up the matter of Economic Entomology, and he considered both were culpably ignorant.

May 10th.—The President in the chair. Mr. H. B. Laurence, of Anerley, was elected a member. Mr. South exhibited a bred series of *Boarmia cinctaria*, Schiff., with the parent female from Glengarriff, Ireland; like the female they were pale, but not so pale as those

captured by Mr. Kane some time ago. Also the new postal-box invented by Dr. Knaggs; a trial was made, insects were placed in it, and after rough usage it was opened, and the specimens were found quite intact, showing it to be a very successful device. Mr. Barrett, on behalf of Mr. Sidney Webb, the pick of his valuable and extraordinary varieties of the "Tigers," and no doubt unequalled in the world, viz.: *Arctia villica*, L., varying from almost spotless to nearly black; *A. caia*, L., spotless, brown marbled, pale blotched, pink shaded, black suffused, and half one colour, half another, &c.; *Nemeophila plantaginis*, L., red and pale; *Callimorpha dominula*, L., yellow, white spotted, pink, and dusky. Mr. Barrett made some remarks on the normal and abnormal varieties exhibited. Mr. Frohawk, a specimen of *Vanessa urticae*, L., having the marginal blue spots exaggerated, and extending into the black border about twice the usual distance. Mr. Adkin, a case containing series of most of the genus *Taeniacampa*, showing extreme variation, all from the New Forest. Mr. Williams, a bred specimen of *Pieris napi*, L., in which only the hind wings had developed. Mr. Turner, specimens of *Sirex gigas* from Box Hill and Chichester, several species of Neuroptera, and a specimen of *Bombylius major* from Box Hill.—HY. J. TURNER (Hon. Report. Sec.).

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—March 19th, 1894.—Mr. R. C. Bradley in the chair. Exhibits:—By Mr. A. H. Martineau, a few insects from Sierra Leone; also a small collection of Lepidoptera made in Lundy Isle by Mr. R. W. Chase, which included *Satyrus semele*, *Vanessa atalanta*, *V. polychloros*, *V. urticae*, *Bombyx rubi*, *Zygæna trifolii*, *Z. filipendulae*, and others. Mr. Bradley remarked that in several cases the forms were decidedly under the average in size. By Mr. Bradley and C. J. Wainwright, each showed boxes containing their Tachinidæ. By Mr. P. W. Abbot, single specimens of *Leucania obsoleta* and *Senta maritima* from near Ely.

April 26th.—Mr. G. H. Kenrick, President, in the chair. Mrs. Petley, Pedmore Lodge, near Stourbridge; Mrs. P. W. Abbott and Miss Titley, Four Oaks, were elected members of the Society. Exhibits:—By Mr. Colbran J. Wainwright, a collection of Diptera made at Wyre Forest at Easter; amongst others there was a large series of an *Echinomyia*, perhaps *ursina*, which had been extremely abundant throughout the forest, more particularly on the willows; there were also short series of *Chilosia grossa* and *flavicornis*, and larger ones of *Syrphus lasiophthalmus* and *Melanostoma quadrimaculatum*, all taken on the willow bloom. He remarked on the bee-like appearance of the *Echinomyia* and the two species of *Chilosia*; the latter resembled *Andrena fulva* so closely that it was with difficulty that he recognised them when settled on the bloom. By Mr. R. C. Bradley, a long series of the above *Echinomyia*, taken at the same time and place; also two specimens of *Bombus latreillellus* from Sutton. By Mr. W. Harrison, living larvæ of *Melitæa artemis*, of which he had taken a considerable number on the devil's-bit scabious at Arley; also *Stauropus fagi*, bred from larvæ taken at Wyre Forest last year; and *Neuria saponariæ* from Wicken Fen. Mr. G. H. Kenrick read some "Notes on the Migration of Insects," in which he called attention to such facts as were known about migration, and dealt with various possible explana-



tions, suggesting that in some cases at least it might be possible that the migration was similar to that in birds; that with *Vanessa cardui*, for example, which appears during the winter months in the North of Africa, Egypt, &c., it was possible that it migrated northwards to moister climates for the summer brood, returning south again for the winter brood; and he asked for information and evidence as to the actual hybernation of this and other migratory species in our own country. A discussion ensued, in which Messrs. R. C. Bradley, G. T. Bethune-Baker, P. W. Abbott, W. Harrison, G. H. Kenrick, and C. J. Wainwright, took part.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*April 9th.*—Last meeting of the winter session, the President in the chair. The following papers were read:—"Lepidoptera of Prescott," by the Rev. R. Freeman; "A Note on Aculeate Hymenoptera and Diurnal Lepidoptera during March, 1894," by Mr. Willoughby Gardner, F.R.G.S.; and "Ammophila lutaria," by Mr. C. E. Stott. All the papers were illustrated by specimens. Reports of the additions to the lists of the insect fauna of Lancashire and Cheshire for the years 1891-2-3 were read as follows:—Coleoptera and Hemiptera-Heteroptera, by Mr. W. E. Sharp; Hymenoptera, by Mr. Willoughby Gardner; and Lepidoptera, by Messrs. Capper and Pierce. These reports showed that many important additions had been made to the lists, and that steady work was being done in the neglected orders. Mr. Jones exhibited a number of *Teniocampa* taken from sallows at Llangollen; Mr. Crabtree, *Callimorpha hera* and light varieties of *Zygana filipendula*; Miss Tomlin, of Chester, a number of Hymenoptera from Madras; the Rev. Mr. Freeman, Rhopalocera from N.W. India; and Mr. Sharp, a collection of local Hemiptera-Heteroptera.—F. N. PIERCE, *Hon. Sec.*

HERTS NATURAL HISTORY SOCIETY.—The 181st ordinary meeting, held at Watford, on April 17th, under the presidency of Dr. Arthur Stradling, F.Z.S., was devoted to the purpose of receiving reports from the recorders in various branches of natural science. Mr. A. E. Gibbs, F.L.S., F.E.S., read a paper entitled "Notes on Lepidoptera observed in Hertfordshire during 1893," in the course of which he gave the experience of observers stationed in various parts of the county, and detailed the most interesting captures. A second paper was subsequently read by the same gentleman on "The Wasp Infestation of 1893," in which he showed the great damage done by wasps, and gave some account of the enormous number of nests destroyed, and the means adopted to keep the numbers down. Votes of thanks were accorded to the recorders for the papers they had read.

A NEW SOCIETY.—THE MIDLAND RAILWAY NATURALISTS' SOCIETY has recently been established at Derby. The first monthly meeting was held on Monday, May 7th, at the Midland Railway Institute, the President, Mr. T. Hey, in the chair. It is proposed to form sections to deal with the various branches of Natural History. The majority of the members are especially entomologists. The meetings of the Society will be held on the first Monday in each month.—F. W. G. PAYNE, *Honorary Assist. Secretary.*

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[No. 374.]

## FURTHER NOTES ON CERTAIN VARIETIES OF *SPILOSOMA LUBRICIPEDA*.

By W. H. TUGWELL.

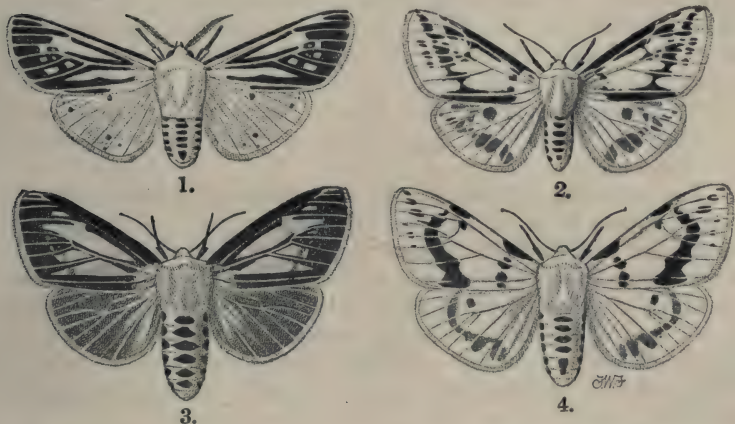


Fig. 1. *S. menthastri* var. *walkeri*, Curt. Fig. 2. *S. lubricipeda* var. *eboraci*, Tugwell. Fig. 3. *S. lubricipeda* var. *zatima*, Cram. (= *radiata*, Haw.). Fig. 4. *S. lubricipeda* var. *fasciata*, Tugwell.

IN my former notes on this subject (*ante*, pp. 95-97 and 129-30) I mentioned that I was much interested in a cross brood between a female of my var. *fasciata* (fig. 4) and a male of the var. *radiata* (= *zatima*) (fig. 3) that Mr. Porritt and I had then in pupa; this cross being just the reverse to that effected by Mr. Harrison, who in his first brood in 1891-2 crossed a bred female *radiata* with a strongly-marked northern (*i. e.*, Yorkshire or Lincolnshire) male. It will be recollected that from this pairing in 1891 Mr. Harrison bred a varied brood showing evidences of both parents, and exhibiting the gradations between true *radiata*



and the normal form of *lubricipeda*, a fair percentage being *radiata*. By selecting males and females of the latter form, and breeding from them, Mr. Harrison has supplied us with this grand variety of *lubricipeda*. In May, 1893, when I was breeding the form I named *fasciata*, I selected a strongly-banded female, and sent to Mr. Porritt for him to try and cross with *radiata*, the emergence of that form being over with me. Mr. Porritt's *radiata* being a trifle later, he was enabled to obtain the desired crossing, and we each had a portion of the ova. The result now off the setting-boards is most satisfactory and interesting.

A few only of my portion came out as true *radiata*, like its male parent; most of them favoured the female parent; that is to say, had not the black under wings finely pencilled by the yellow nervures of *radiata*, but had instead the broadly-marked note of interrogation-like character so pronounced in the var. *fasciata*. Still, curiously, not one was quite a pure *fasciata*, always having the strongly-developed oblique line of markings from the apical tip to the middle of inner margin very strongly accentuated; in fact, being almost identical with the York City form, *eboraci* (fig. 2). This is very interesting, as out of the large brood of *radiata* I bred in 1893-4 (720 ova, the result of one single pairing) not one of that brood could be mistaken for *eboraci*. But the cross of a female *fasciata* and a male *radiata* virtually produced that form, some of them being particularly striking vars.

The outcome of this cross is both interesting and suggestive. and it occurs to me that the "York City form" *eboraci* resulted from just this kind of cross. Has not a male *radiata* from the sand dunes of Lincolnshire or Yorkshire a greater chance of reaching York by flight than would a heavy female charged with eggs? and a cross between an errant *radiata* male and a local female *lubricipeda* would, we now see, produce such offspring. This of course is mere hypothesis, but still possible, and may we not say probable.

6, Lewisham Road, Greenwich.

[As they may better fix the various forms referred to, figures of vars. *zatima*, Cram. (= *radiata*, Haw.), *eboraci*, and *fasciata*, Tugwell, are given; these, together with others in vol. xxvi. p. 257, furnish a very good idea of the variation of *S. lubricipeda*. *Walkeri*, Curtis, is a variety of *S. menthastri*, but as it is somewhat similar to var. *zatima* of *S. lubricipeda*, and has been confounded with that form, the original figure is here reproduced in black and white (fig. 1).—ED.]

## THE HUNTING-SPIDER OF THE VINE.

BY T. D. A. COCKERELL,

Entomologist of the New Mexico (U.S.A.) Agricultural Experiment Station.

ON April 30th, when investigating the insects of the grape-vine at Las Cruces, New Mexico, I found a beautiful little Attid spider in some numbers. The vine-insects hitherto observed in this vicinity exceed a dozen, of which one in particular, the leaf-hopper (*Typhlocyba*), is decidedly troublesome. Certain beetles were found, which live upon the vines, and undoubtedly destroy some of the injurious species; of these a Coccinellid, *Hippodamia convergens*, Guér., and a Malachiid, *Collops vittatus*, Say, were observed by me to be particularly numerous.

The spider was not actually observed to prey upon the leaf-hoppers, but that it does so cannot be well doubted. I brought away several specimens, and on comparing them with the published descriptions was quite surprised to find that they would fit none, and the genus even was rather uncertain. I wrote out a description, but fearing that I had overlooked some species already published, I forwarded my types to Mr. George W. Peckham for his opinion. The reply soon came that the creature represented not only a new species, but a new genus! Mr. Peckham wrote:—"It is certainly a new species, bearing a general relation to *Icius* (*Dendryphantes*) *elegans*, but quite distinct. I have a still closer relation from Kansas, but the latter is larger, with different colours. I know of no genus into which it will properly fit, and suggest that you make a new genus to take in your species and the one from Kansas. This genus would be related to *Icius*, and also to *Eris*."

At the present time, at all events, I do not care to act on Mr. Peckham's kind suggestion as to the new genus, and will describe the spider under the name I first gave it in MS., *Dendryphantes vitis*. I have found some difficulty in understanding the existing genera of Attidæ, and it would seem a case of the blind trying to lead the blind were I to propose a new one. But Mr. Peckham, on the other hand, is a master of the subject, and should he find time and opportunity himself to describe the new genus, science will gain thereby.

*Dendryphantes vitis*, n. sp.

Total length,  $3\frac{1}{2}$  mm. Length of first pair of legs,  $3\frac{1}{2}$  mm.; of second, 2; of third, 2 or slightly less; of fourth,  $2\frac{1}{2}$ . Leg-formula, 1423. Cephalothorax, breadth,  $1\frac{1}{4}$  mm.; length,  $1\frac{3}{4}$  mm. Abdomen, breadth, 1 mm.; length, 2 mm. Patella and tibia of first leg,  $1\frac{2}{5}$  mm. Cephalothorax flat, squared in front. Cephalic part shorter than thoracic, but not much shorter. Dorsum of cephalic part brilliant, with rosy scales; of thoracic part dark,



with a few pink scales; a creamy patch behind each dorsal (hindmost) eye. Sides of cephalothorax black, the thoracic part with a marginal silvery band. Quadrangle of eyes slightly widest behind; third pair of eyes nearer second than fourth. The four front eyes touching (or almost so); first about twice diameter of second. Under side, including palpi and mandibles, all dark reddish brown. A few brilliantly iridescent metallic scales on under side of abdomen toward the sides. Some white scales on tibia and patella of last three pairs of legs, and conspicuously on inner side of tibia and patella of first pair. Abdomen covered with appressed hairs and scales, shining metallic yellowish silvery, with a greenish tinge. A creamy-white band bordering anterior half. Four small creamy-white marks, *i. e.*, two subdorsal about middle of abdomen, and two larger elongate lateral marks towards the end, representing a broadly interrupted band. First pair of legs with stout femora; coxa and femur brown-black; tibia and first half of tarsus dark red-brown; last half of tarsus orange-brown. Claws of all the legs black. The last three pairs of legs have the coxæ shining somewhat translucent reddish brown; femora brown-black (last pair with femora rather dark brown); tibiæ and first half of tarsi red-brown; last half of tarsi paler. Legs sparingly hirsute with dark hairs. Tibia of fore leg with three black spines on inner side; first joint of tarsus with two larger black spines on inner side. Tibia of fore leg much longer than patella, but not twice as long. The third leg has a somewhat longer tarsus than the second, but the patella and tibia is much shorter than in the second.

From *D. elegans*, Hentz, it may at once be known by the close proximity of the second eyes to the first; whereas in *elegans* they are separated from them by one-half their own diameter. The eyes of the second row are also differently placed.

Las Cruces, New Mexico, U.S.A., May 11th, 1894.

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## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 126.)

*CYMATOPHORA FLUCTUOSA*, *Hb.*—Very rare. The Irish specimens which I have seen have the ground colour of a pearly white, and the band dark grey, well marked. Killarney (*B.*). I took one near Cromaglaun Glen, on the Upper Lake. Two near Kenmare (*Miss V.*), Co. Kerry; Rookwood, L. Gill, Co. Sligo (*Russ.*), where I also took two.

[*Asphalia diluta* and *flavicornis*. Mr. Birchall gives Killarney as a locality for the former, and states the latter to be common

in Ireland. I have never seen Irish specimens of either, and believe the former locality to have been derived from a very unreliable source].

## NOCTUÆ.

### BRYOPHILIDÆ.

*BRYOPHILA MURALIS*, *Forst.*—The type has been taken by the Rev. Joseph Greene, and I think the late Frederick Bond, at Queenstown, and elsewhere in the vicinity of Cork by the late Mr. Sinclair, whose collection I possess. They present very great diversity, and range from specimens belonging to Mr. Bond, which he states (*in litt.*) are greener than any English ones in his possession, to a dingy yellowish grey with strongly-marked design. In Co. Galway a few examples of ordinary character have been captured by Mr. Allen and Mr. Dillon.

Var. *impar*, Warren.—Along with the type, which occurs numerous in the neighbourhood of Cork, Mr. Sinclair took a very long series of extremely varied forms, some of which correspond to the various aberrations named by Mr. Tutt "*flavescens*, *pallida*, *obscura*," and others, to *impar*, Warren. The design, which in the type consists of sharply-defined black lines, becomes more and more obsolete in the aberrations, till it is merely represented in *impar* by pale striæ, and in var. *obscura* by dark blotches on a smoky grey ground. When Mr. Warren published his description of the Cambridge variety, under the name of v. *par*, Hb., I showed a selection of my Cork specimens to him, which he acknowledged to belong to that form (*Ent. Mo. Mag.* xxi. 23). Mr. Bond also identified them at once as "Mr. Warren's *par* or *impar*." The varietal characters quoted and given by Mr. Tutt ('British Noctuæ,' vol. iv.) are all shown by the Cork examples; but last year Mr. Farren allowed me to inspect a fine fresh series taken by him at Cambridge, among which were some more uniformly speckled, with very distinct black scales, and of a steel-grey coloration. I have no Irish examples which correspond with these. It has been urged by some that v. *impar* may be classed as a distinct species (or subspecies, whatever that may mean); but it must be recollected that in Co. Cork a very graduated series can be taken on the same wall with the type, including the form named by Mr. Warren, which grades off into the v. *obscura*. *Impar*, therefore, is only an aberrant form in Cork, though a local variety at Cambridge, only one specimen of the type having been recorded there. I am not in favour of indicating every grade of variation of so unstable an insect by a separate name, unless it is very distinct from the rest, or is strictly localised. I acknowledge, however, that the speckled bluish grey form taken by Mr. Farren, at Cambridge, is a very remarkable one, and well distinguishable from the general run of *impar*. The following description of the



Irish *impar* is quoted from a paper of mine on South of Ireland Lepidoptera, published in the 'Proceedings of the Royal Irish Academy' (vol. iv. p. 113):—"This variety differs from the type by its blurred delineation, the sharp black lines of *Bryophila muralis* being replaced by ill-defined shadings; the black spots on costa being, however, retained as in type. In the lighter specimens the clear ground colour of type is replaced by a faded greenish or yellowish dusty grey, marked with dusky shadings, the black ante-marginal line being replaced by a pale one, having a dark external blotch where it touches the inner margin. The darker examples have a dark olive-grey ground colour, with darker suffused shadings, especially three blotches external to the ante-marginal line, of which *the one resting on the inner margin is always the deepest in tone*. Intermediate between the pallid obsolete form and the melanic one just described is a series differing in depth of ground colour and shading, the blotch above described being always the darkest mark on the wing. All four wings have a slight black line at the base of the cilia. The thorax of this variety also is more or less dusted with minute black specks."

BRYOPHILA PERLA, Fb. — Common and widely distributed. The type is frequent in the South, as well as occurring in Co. Down, at Newcastle (*W.*); Armagh (*J.*); Co. Galway (*Mr. Dillon*); and in Co. Dublin, where, at Howth (*G. V. H.*), has been also taken the ochreous tinted form *flavescens*, Tutt.

#### BOMBYCOIDÆ.

MOMA ORION, *Esp.*—The Hon. R. E. Dillon sent me one of three specimens of this species, taken at Clonbrock, Co. Galway, and mentioned having also found larvæ, which, however, he failed to rear. Also, on July 19th, 1893, we were at Mote Park, Co. Roscommon, when he saw, but failed to take, an imago. (*Cf.* 'Entomologist,' vol. xxvii. p. 91.)

DEMAS CORYLI, *L.*—Distributed throughout Ireland, but not met with generally in large numbers, except occasionally in the larval stage. The imago varies in the strength of the brown band on the fore wings, which sometimes almost obliterates the stigmatic and waved markings; while in others the band is only slightly represented, and one has been taken at Clonbrock, by the Hon. R. E. Dillon, in which it is obsolete. Co. Donegal, Buncrana, and "common in the woods about L. Swilly" (*C.*); Co. Sligo, Knocknarea (*R.*) and Markree; Co. Roscommon, Hollybrook; Co. Tyrone, common about Favour Royal and Altadiawan; Co. Monaghan, Drumreask; Co. Cavan, Farnham; Co. Galway, common at Ardrahan (*Miss N.*), and Clonbrock (*R. E. D.*); Co. Wicklow, Powerscourt, and Glendalough; Co. Waterford, generally spread; Co. Kerry, Killarney.

*ACRONYCTA TRIDENS*, *Schiff.*—I know little of the distribution of this species, as I am unwilling to record reputed captures of the imago. "Dublin and Galway" (*B.*); larvæ at Inishowen and Donegal (*W. E. H.*); Mr. Russ reports it from near Sligo; and at Banagher, King's Co., I took an imago probably of this species. It must be rare in Ireland, as I have never beaten the larvæ.

*ACRONYCTA PSI*, *L.*—Everywhere abundant in the pale typical form. I have seen no suffused Irish specimens.

*ACRONYCTA LEPORINA*, *L.*—I know of no captures of this insect in the northern half of Ireland. I have taken it at Howth, Co. Dublin, and Mr. Fitzgibbon the larvæ; Mr. Birchall records it from Powerscourt, Co. Wicklow; and Co. Kerry, where I have met with it at Killarney, and Miss Vernon near Kenmare. One at Waterford; Co. Galway, Clonbrock, abundant (*R. E. D.*); and one at Dalyston, near Loughrea. All Irish examples that I have seen are the typical form with white ground, except one I took at Killarney, which has the outer margin suffused, and is represented by the third figure in Newman's 'British Moths,' but with paler shadings.

*ACRONYCTA ACERIS*, *L.*—Co. Galway, Claring Bridge (*B.*), and one near Ahascragh (*R. E. D.*). Mr. Donovan sent me some pupæ from Glandore, Co. Cork, which he attributed to this species, but they did not produce imagines.

*ACRONYCTA MEGACEPHALA*, *Fb.*—Decidedly scarce in Ireland. Rare in Co. Down (*W.*); Co. Monaghan, one near Favour Royal; Co. Wicklow and Co. Dublin, one (*Greene*), and several at Howth (*G. V. H.*); Co. Galway, Clonbrock, two (*R. E. D.*); Co. Westmeath, Killynion, one (*Miss R.*).

*ACRONYCTA ALNI*, *L.*—"Powerscourt, Co. Wicklow, one" (*B.*); and there is a tradition that one was taken on the walls of Trinity College, Dublin, many years ago, by Mr. Holt; but I failed to find the specimen in his collection.

*ACRONYCTA LIGUSTRI*, *Fb.*—The Irish head-quarters of this insect seems to be the Co. Galway, where it was taken in Connemara by the Hon. Miss Lawless, Claring Bridge (*B.*), Clonbrock, in some numbers (*R. E. D.*), and at Merlin Park by myself.

*ACRONYCTA RUMICIS*, *L.*—Universally distributed throughout Ireland. The var. *salicis*, *Curt.*, also occurs in widely separated localities, together with the type, which graduates from a very pale form almost as ashy grey as *menyanthidis*, with most of the typical dark markings obsolete, to the dark brown *salicis*, two specimens of which I have from Glandore, Co. Cork, in which the only pale marks are a small lunular anal spot, a trace of a



pale antemarginal series of dots, and a pale patch at the base of fore wings. In some instances the dark edgings to the stigmata are scarcely to be distinguished, being almost obliterated by the dark ground colour. Also I have one brown specimen with black markings, without any white or grey spots. The distribution of the var. *salicis* does not appear dependent on climate. I have fine specimens from Ulster, near Favour Royal, on the borders of the Counties Tyrone and Monaghan; in the midland County of Westmeath, at Killynon (*Miss R.*); and in the South of Cork and Kerry, at Glandore and Ardtully respectively; and at Wexford. My palest grey specimen of the type referred to above, I took at Drumreask, Co. Monaghan; at Newcastle, Co. Down, Mr. Watts reports very pale forms, which also I have noted in the West of King's Co., in Tyrone, and in Kerry.

ACRONYCTA MENYANTHIDIS, *Vw.* — Apparently rare and very local in Ireland. Those which I have seen seem to belong to the var. *scotica* of Tutt, showing a very white central area, with the outer marginal band, the suffusion about the reniform stigma, and basal half of the inner margin, often very strongly shaded with black. I have seen Aberdeen specimens very similar in the sharp contrast of black and white. Letterkenny, Co. Donegal, Rev. R. Harvey (*B.*); Co. Sligo, at L. Gill and Markree; Killynon, Co. Westmeath; two larvæ on *Myrica gale*, near Galway (*A.*).

ACRONYCTA EUPHORBIÆ var. *montivaga*, *Gn.* — Rare and local in Ireland. I have two from Markree and L. Gill, Co. Sligo, which are identical in colour and traits with my types of *R. montivaga* from the Continent. And Dr. Staudinger identified British specimens sent him as belonging to this variety rather than to *myricæ*, *Gn.* (*Entom.* vol. xi. p. 41). Mr. Tutt considers that Rannoch examples belong to the latter. Clonbrock, Co. Galway (*R. E. D.*). I have specimens taken near Caragh L., Co. Kerry, by Dr. W. E. Battersby. I also found two pupæ in cocoons interwoven with lichen on a rock at Galley Head, Co. Cork. All these localities are at a low elevation above the sea, and the climate of Cork and Kerry is very equable and mild; so that if the divergence from the type originated from alpine conditions, it is interesting to find it persistent, in spite of altered climatal environment, since the first arrival of the species in Ireland, presumably at the close of the glacial epoch.

DILOBA CÆRULEOCEPHALA, *L.* — "Generally distributed, but apparently not abundant" (*B.*). I know but the following localities: — Magilligan, ab. Co. Derry (*C.*); Enniskillen (*S.*); Cromlyn, Westmeath (*Mrs. B.*); Ardahan (*Miss N.*); also imago not scarce, and larvæ on whitethorn, near Ahascragh (*R. E. D.*), Co. Galway; near Cork (*H. C. Sandford*).

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, Ph.D., F.L.S., &amp;c.

(Continued from p. 193.)

PLATYJA, *Hübner*.*Cotuza* and *Ginæa*, Walk.*Platyja umminia*.♀ *Phalæna umminia*, Cramer, Pap. Exot. iii. p. 137, pl. cclxvii. fig. F.*Sympis subunita*, Guenée, Noct. iii. p. 344, n. 1810 (1852).♂ *Cotuza drepanoides*, Walker, Lep. Het. xv. p. 1552, n. 1 (1858).♀ *Ginæa removens*, Walker, l. c., p. 1638, n. 1 (1858).

Java, Sumatra, Borneo, Penang, Moulmein, Hong-Kong, N. India, and Cape York. In Coll. B. M.

## CALPIDÆ.

The proper position for this family is, I have no doubt, between the so-called Ophideridæ (though the genus *Ophideres* falls as a synonym of *Othreis*, Hübn.), which will have to be called Othreidæ, and the Plusiidæ.

GONODONTA, *Hübner*.*Gonodonta incurva*.*Phalæna incurva*, Sepp. Surin. Vlind. ii. p. 201, pl. 89 (? 1850).*Gonodonta teretimacula*, Guenée, Noct. ii. p. 367, n. 1211 (1852).*Gonodonta temperata*, Walker, Lep. Het. xii. p. 957, n. 26 (1857).*Gonodonta velata*, Walker, l. c., n. 27 (1857).

Venezuela, Guadeloupe, Ega. In Coll. B. M.

A slightly variable and widely distributed species.

## PLUSIIDÆ.

*Plusia signata*.*Noctua signata*, Fabricius, Ent. Syst. iii. 2, p. 81, n. 234 (1793).*Plusia diminuta*, Walker, Lep. Het. Suppl. iii. p. 837 (1865).

Java, Fiji, and Sierra Leone. In Coll. B. M.

Although there is no ?-shaped marking on the primaries, as mentioned by Fabricius, but two markings, *ov*, as in *P. nigriluna* and other allied forms, it appears to be the only species in which the three black sub-basal spots mentioned by the describer of *P. signata* are present; as a matter of fact, whenever the note of interrogation is present in the species of *Plusia* it is without its terminal dot and lies on its back, being followed by a spot of silver or gold thus—∩.: for a trivial name, the "hook-and-eye



moth " would be far more appropriate to this character than any other.

*Plusia limbirena.*

*Plusia limbirena*, Guenée, Noct. ii. p. 350, n. 1179 (1852).

*Plusia confusa*, Moore, Deser. Ind. Lep. Atk. ii. p. 149 (1882).

Delagoa Bay, S. Africa, Madagascar, St. Helena, Aden, Nilgiris. In Coll. B. M.

There is absolutely no difference between African and Indian examples of this species.

*Plusia eriosoma.*

*Plusia eriosoma*, Doubleday, Dieff. New Zeal. i. p. 285, n. 114 (1843).

*Plusia verticillata*, Guenée, Noct. ii. p. 344, n. 1168 (1852).

*Plusia rogationis*, Guenée, *l. c.*, n. 1169 (1852).

*Plusia includens*, Walker, Lep. Het. xii. p. 914, n. 59 (1857).

*Plusia hamifera*, Walker, *l. c.*, p. 917, n. 64 (1857).

*Plusia acuta*, Walker, *l. c.*, p. 922, n. 75 (1857).

*Plusia adjuncta*, Walker, *l. c.*, Suppl. iii. p. 840 (1865).

*Plusia dyaus*, Grote (see Check-List, p. 34, n. 856).

*Plusia chrysosema*, Zeller in coll. (ined. ?).

Java, Borneo, Ceylon, Japan, Formosa, China, Nilgiris, Dhamsala, Karachi, Silhet, Moulmein, Philippines, Port Darwin, Sidney, New Zealand, Tonga, Eimeo Isl., Oahu, Hawaii, United States, Caraccas, Venezuela, St. Domingo, Santarem, Sao Paulo, Rio Janeiro, Wadelai, Congo, Port Natal.

Although slightly variable in tint and the prominence of golden cupreous gloss on the wings, the species really shows such trivial modifications that its synonymy is astonishing.

*Plusia ou.*

*Plusia ou*, Guenée, Noct. ii. p. 348, n. 1176 (1852).

*Plusia fratella*, Grote (see Check-List, p. 34, n. 864).

United States. In Coll. B. M.

Grote's type is only a dwarfed specimen of the male, and differs hardly at all from the distorted example selected by Guenée as the type of his *P. ou*.

*Plusia californica.*

*Plusia californica*, Speyer (see Grote's Check-List, p. 34, n. 862).

The bulk of the species so labelled in the Museum are from California; two from Vancouver, and one from Hudson's Bay: these are identical with Grote's *P. pseudogamma*.

The species labelled by Grote as *P. gamma* var. *californica*, Speyer, differs in no respect from the European species: his example is from Vancouver, and one in the Museum is from the Rocky Mountains.

Surely the Californian form must be the one named by Speyer; in which case Grote's insect is synonymous, but I very

much doubt whether the distinctness of the latter from *P. gamma* can be maintained.

*Plusia jessica.*

*Plusia jessica*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. i. p. 201 (1878); Ill. Typ. Lep. Hist. iii. p. 22, pl. xlv. fig. 6 (1879).

*Plusia serena*, Butler, l. c. vol. iv. p. 368, n. 51 (1879).  
Yokohama, Tokio. Types in Coll. B. M.

*Plusia mandarina.*

*Plusia mandarina*, Freyer, Neuere Beitrage, v. p. 164, n. 869, pl. 479, fig. 4 (1846).

*Plusia typinota*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. i. p. 201 (1878); Ill. Typ. Lep. Het. ii. p. 34, pl. xxxi. fig. 10 (1878).

Ural (*Freyer*). — ? (Zell. coll.). Japan in Coll. B. M.

Freyer's figure is so much more like *P. gutta* than the species recognized as *P. mandarina* by European Lepidopterists, that I am, even now, not satisfied that their identification of his species is correct: with the colour-blindness common to many entomologists, the silver markings on the primaries are rendered as golden; but, apart from this, the shorter wings and the prominence of the dark central belt are far more characteristic of *P. gutta* than of the *P. gamma* group: at the same time, if the markings of Freyer's type really are golden, the species can neither be *P. typinota* nor *P. gutta*. For the present I accept the identification, on the chance that Freyer's figure may be exceptionally bad. On the other hand, *P. macrogamma* is certainly the same as *P. typinota*, whether Zeller's specimens of *P. mandarina* are rightly or wrongly named.

*Plusia circumflexa.*

*Phalena circumflexa*, Linneus, Syst. Nat. xii. p. 841.

*Plusia patefacta*, Walker, Lep. Het. xii. p. 924, n. 78 (1857).  
Europe, S. Africa, Teneriffe, Nilgiris. In Coll. B. M.

*Plusia flagellum.*

*Plusia flagellum*, Walker, Lep. Het. xii. p. 909, n. 49 (1857).

*Plusia monodon*, Grote (see Check-List, p. 34, n. 860).  
United States. In Coll. B. M.

*Plusia oxygramma.*

*Autographia oxygramma*, Hübner, Geyer Zutr. Exot Schmett. p. 37, figs. 769, 770.

*Abrostola transfixa*, Walker, Lep. Het. xii. p. 884, n. 8 (1857).

Natal, Ceylon, Java, Japan, China, Nilgiris, Dhamsala, Moreton Bay, and Fiji. In Coll. B. M.

Hübner's locality, "Georgia," probably means Georgia in Asia.



*Plusia indigna.*

*Plusia indigna*, Walker, Lep. Het. xii. p. 909, n. 50 (1857).

*Plusia parallela*, Walker, l. c., p. 918, n. 66 (1857).

North and South America. Types in Coll. B.M.

*Plusia anargyra.*

*Plusia anargyra*, Guenée, Noct. ii. p. 351, n. 1183 (1852).

*Plusia spoliata*, Walker, Lep. Het. xii. p. 923, n. 76 (1857).

Madagascar, Congo, and Nilgiris. In Coll. B. M.

## LOPHOPTERIDÆ.

*Patæta*, Walk.*Patæta carbo.*

*Phlegetonia carbo*, Guenée, Noct. 2, p. 302, n. 1108 (1852).

*Patæta conspicienda*, Walker, Lep. Het. xv. p. 1748, n. 1 (1858).

Australia. In Coll. B. M.

## STICTOPTERA, Guen.

*Stictoptera diaphana.*

*Stictoptera diaphana*, Guenée, Noct. 2, p. 53, n. 1386 (1852).

*S. subaurata*, Walker, Lep. Het. xiii. p. 1132, n. 5 (1857).

*S. phryganoides*, Walker, l. c., xv. p. 1812 (1858).

*Nagara? steirialis*, Walker, l. c., Suppl. 4, p. 1379 (1865).

Amazons. In Coll. B. M.

It is quite clear that Walker never attempted to identify the Lophopteridæ described by M. Guenée, all of which are quite easy to recognize.

*Stictoptera vitrea.*

*Stictoptera vitrea*, Guenée, Noct. 3, p. 53, n. 1385 (1852).

*Nagara phryganealis*, Walker, Lep. Het. Suppl. 4, p. 1378 (1865).

Jamaica, Rio Janeiro, and Pará. In Coll. B. M.

*Stictoptera trajiciens.*

*Steiria trajiciens*, Walker, Lep. Het. xiii. p. 1137, n. 3 (1857).

*S. æquilinea*, Walker, l. c., Suppl. 3, p. 922 (1865).

Ceylon and Saráwak. Type in Coll. B. M.

Colonel Swinhoe says that Walker's identification of *S. æquilinea* (Journ. Linn. Soc. vii. p. 174, from the Saunders' collection) is incorrect. The type is at Oxford, and is (he says) distinct from *S. trajiciens*.

*Stictoptera divaricata*, Grote, belongs to the Hadenidæ; its neurational and other characters are quite unlike those of true *Stictoptera*. It is a species of *Sasunaga*, Moore, which is *Magusa*, Walk., and is Felder's *M. dissidens*.\* Walker's *Xylina orbifera* is a variety of his *Magusa strigifera*.

\* *Laphygma angustipennis*, Moeschler, from Jamaica, is the same species.

LOPHOPTERA, *Guen.**Lophoptera squammigera.*

*Lophoptera squammigera*, Guenée, Noct. 3, p. 55, n. 1388 (1852).

*L. vittigera*, Walker, Lep. Het. Suppl. 3, p. 920 (1865).

Australia. In Coll. B. M.

The genus *Lophoptera* is closely allied to *Stictoptera*, but differs in its somewhat less produced comparatively broader primaries, on which are sometimes (I think not always, unless they tend to disappear in set specimens) little spots of raised scales. Like all the Lophopteridæ, the frenulum is single in both sexes, and as the antennæ are also simple, the discrimination of the sexes is not easy, until one's eye becomes accustomed to the difference in the form of the thorax, and the slightly more slender antennæ of the female.

(To be continued.)

## NOTES AND OBSERVATIONS.

NATURAL AND ARTIFICIAL EXTERMINATION OF LEPIDOPTERA.—Some years ago I planted, in a small reservoir, some *Typha latifolia*, which in due time became a flourishing little colony. After a time *Nonagria typhæ* was found to have made a settlement amongst it, though the nearest place where the plant grows is nearer three miles than two, and it is in very sparing quantity there. In the spring of 1892, as the young *Typha* came up, it was found to be swarming with young larvæ of *N. typhæ*, often ten to twenty in one shoot. The result was that not one *Typha* plant grew a flower-head, and not one *N. typhæ* larva produced a moth. In 1893 the moth was entirely absent, and the plant flowered abundantly. This spring (1894) I see traces of young *N. typhæ* larvæ, showing that a moth had again reached the spot last summer. This shows how far moths may travel to a vacant habitat, and is especially interesting as showing how a moth in a limited habitat may exterminate itself by its own luxuriance and abundance. As an illustration how much more this natural process is effective than any injudicious collecting by the entomologist, it may be noted that last year Dr. Wood and I, wishing to study the insect, took from *Poa aquatica*, in the same small reservoir, all the *Chilo forficellus* we could find. But I see the larvæ are there again this spring.—T. A. CHAPMAN; Fribank, Hereford, June, 1894.

ENTOMOLOGICAL CABINETS.—A question frequently asked by young collectors of British Lepidoptera, who are thinking of setting up their first cabinet, is "how many drawers shall I be likely to require?" Now before advice on such an important matter can be given, it is necessary to ascertain the lines upon which the enquirer proposes to form his collection. If he intends to be satisfied with a short series of each species of Macro-Lepidoptera, he will probably find a cabinet of



thirty or thirty-two drawers sufficient for his purpose ; but if he desires to include the Micro-Lepidoptera, he will require at least forty drawers. Should he, however, happen to aspire to higher efforts, and will not be content with anything less than a collection which shall more or less fully represent the species in all their various forms as found throughout the British Islands, he will find that one hundred and fifty drawers will not be one too many for its proper accommodation. The present writer's arranged collection of British Lepidoptera comprises 25,000 specimens (14,300 Macros, 10,700 Micros), and is contained in one hundred and fourteen drawers as follows :—

	Drawers	Specimens		Drawers	Specimens
Rhopalocera	..... 15	..... 2072	Pyralides	..... 3	..... 1045
Sphinges and	} ... 11	..... 1575	Pterophori	..... 2	..... 566
Bombyces			Crambi	..... 4	..... 984
Noctuæ	..... 29	..... 5082	Tortrices	..... 12	..... 5210
Geometræ	..... 26	..... 5571	Tineæ	..... 12	..... 2895

It will be seen that only fifteen drawers are assigned to the butterflies, but the series of several species in this department are too short, and at least five more drawers are required. Several additional drawers should also be given to the Sphinges, Bombyces, and Noctuæ. As previously stated, a really good representative collection of the Lepidoptera of the British Islands cannot be contained in less than one hundred and fifty drawers, and the most convenient arrangement would be to have this number made up into three cabinets of forty drawers each, and one of thirty drawers. One large cabinet might then be devoted to the Rhopalocera, Sphinges and Bombyces ; another to the Noctuæ ; and the third to the Geometræ, Pyralides, Crambi, and Pterophori. The drawers of the fourth cabinet may be reserved for Tortrices and Tineæ. In the matter of dimensions of the drawers, the most convenient size is 17 or 18 in.  $\times$  16 in., and the depth need not be more than  $1\frac{5}{16}$  in. for the Macros, which will give a space of about  $1\frac{1}{4}$  in. from cork to glass ; for the Micros,  $1\frac{3}{8}$  in., or about 1 in. from cork to glass, is sufficient. Probably the best wood of which cabinets can be made is well-seasoned mahogany, and they can be obtained in this material at from 10s. to 25s. per drawer. For all practical purposes, those at the lower price are quite good enough.—RICHARD SOUTH.

SCARCITY OF BUTTERFLIES.—I do not know if it is the same everywhere this season, but at this place, and at Chatham and Sheerness, during the past four weeks, the scarcity of butterflies has been remarkable. On many occasions I have been out on warm, bright days and have not seen a dozen of our common Pieridæ ; and I have not seen a single *L. egeria*, only two or three *megera*, and but a couple of *C. pamphilus*, the latter species being usually abundant in our marshy meadows. The weather at the beginning of this week was delightfully bright and warm, on the 18th it became bitterly cold, and to-day we have had several sharp showers of hail and sleet.—GERVASE F. MATHEW ; Dovercourt, May 20th, 1894.

A SUPPOSED NEW SPECIES OF EUCHLOË.—In the Entomologist's Record for April, reference is made to a probable new species of *Euchloë*. The butterfly is described as much smaller than *Euchloë*

*cardamines*, "measuring on an average only about an inch and a quarter from tip to tip of the fore wings," and as having the black discoidal spot situated "at the juncture of the orange and white spaces, not, as in *E. cardamines*, well within the orange tip," the costa of the fore wings being sprinkled with black. When viewed under the microscope, it is stated "the wing-scales appear to be very different from those of *E. cardamines*." I have a specimen taken here by myself answering to these particulars, except as regards the scales of the wing. After careful examination with the microscope, however, I can detect little or no difference in these. It may be that in the black discoidal spot in the typical *cardamines* they are narrower and longer than in the smaller insect. For this the writer proposes the name of *Euchloë hesperides*; but it seems to me that, without knowing more of the life-history of the insect, the distinctive characteristics are very slight for raising it to the rank of a species.—JOSEPH ANDERSON, Jun.; Chichester, Sussex.

*SPILOSOMA MENDICA* VAR. *RUSTICA*, AND *AMPHIDASYS BETULARIA* VAR. *DOUBLEDAYARIA*.—A writer in the June number of 'Societas Entomologica,' referring to these two varieties, says that the former is abundant and constant in Roumania, and stated that the latter, which has hitherto been considered confined to England, now extends all over Germany, including Silesia and Saxony.—N. F. DOBREE; Beverley, Yorkshire, June 12th, 1894.

*NEPTICULA TORMENTILLELLA*?—From mines in *Tormentilla officinalis*, obtained at Windermere last October, I am now breeding a very distinct looking *Nepticula*. The larvæ were of a deep yellow colour; the mines were conspicuous, and there were several on a plant. The sexes of the moth are of the same type, but the female is much larger than the male. This species should be the *N. tormentillella* which was expunged from our lists in favour of *N. serella*. The specimens are as large again as those of *N. serella*. I may add that the species, which I will call *N. tormentillella*, is exceedingly local, although the food-plant is plentiful enough in some of the woods.—J. B. HODGKINSON; Ashton-on-Ribble, April 12th, 1894.

**EXTRACTION OF SUGAR FROM THE BODIES OF INSECTS.**—It is well known that Noctuæ, when gorged and glutted with sugar, are apt, if killed before the expulsion of their contents, to present an unsightly appearance; for after a variable time the more fluid portions of the sugaring compound will sometimes permeate the tissues, and cause darker stains upon the surface than even grease itself; while, many years after having been converted into specimens, black bead-like drops have been observed to exude from pin-pricks in the bodies of such species as *Scopelosoma satellitia* and *Cerastis vaccinii*. This condition of things is by no means difficult to remedy. The plan here suggested is to double up a small piece of tinfoil, run a pin up to the head through it, and stand it, pin-point upwards, in a tea-cup; then break off the body to be operated upon, stick it thoracic end downwards on the pin, and cover the whole with cold distilled water for an hour or so. The object of thus fixing the body is to keep it off the bottom of the vessel, in order that the offending matter as it melts may sink with as little soiling of



the external surface of the abdomen as possible. The body should then be secured, thoracic end up, and thoroughly dried in a current of warm, dry air before being refixed in its original position. Of course several bodies can be thus treated simultaneously. The advantages of *distilled* water over the fluid supplied by the water companies are that it contains neither organic matter nor salts, such as sulphates and chlorides, and is consequently a much better solvent for the purpose; and, secondly, that the necessity for boiling, which must be very detrimental to the tissues of the insect, is obviated.—H. GUARD KNAGGS; London, N.W., June 4th, 1894.

CHARICLEA DELPHINII (PEASE-BLOSSOM).—To my mind this is one of the most beautiful of our British moths, and may briefly be described as being of a pale greyish ochreous with a lovely tinge of rose. The caterpillar is also a pretty creature, being of a reddish or bluish white; the food-plant is larkspur. Not having occurred in England for a great many years, it has been erased from the British lists, although it has as good a right to stand in them as *Chrysophanus dispar* and *Noctua subrosea*, except, perhaps, that like *P. moneta*, it may have been introduced into this country amongst garden plants. Its caterpillar, though, is reported by Merian and Rosel to feed upon the wild larkspur that grows among corn. Wilks informs us that as long ago as 1773 this fly had been bred in England by the Hon. Mrs. Wither, and by Nathaniel Oldham, Esq., but was very rare. A wing is said to have been found "at Bulstrode, in a spider's web, by the celebrated Duchess of Portland; and another in St. James's Park; and in July, 1799, Mr. W. Jones took a very perfect specimen in his garden at Chelsea." Haworth informs us that these are the only instances of its occurrence in England, and that it is so rare in Germany as to sell for a guinea a pair. One specimen of *delphinii* was sold in lot 3186 of the Duchess of Portland's effects, on May 27th, 1786. This is probably the specimen taken in St. James's Park. In June, 1815, a specimen or two were taken at Windsor by Mr. Griesbach. In more recent times three specimens are recorded in the 'Intelligencer' for December 19th, 1857.—C. W. DALE; Glanvilles Wootton, Sherborne, Dorset.

'EUROPEAN BUTTERFLIES AND MOTHS.'—Messrs. Cassell & Co. are now publishing, in monthly parts, a new series of Kirby's 'European Butterflies and Moths.' At a recent auction sale a copy of the last edition of this work realised twenty-six shillings.

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## CAPTURES AND FIELD REPORTS.

EARLY DRAGONFLIES.—Despite the inclement weather I am able to record several dragonfly captures, all in the neighbourhood of Oxshott, Surrey. The first to fall to the net was a single specimen of *Libellula quadrimaculata* on April 25th. It was weak on the wing, and appeared as if only lately out. I took others, male and female, on April 29th, and again on May 14th, while one was found at rest on the evening of May

18th, all by the margin of the Black Pond in Claremont Woods. Large numbers of both sexes of *Pyrrhosoma minium* were on the wing at the same spot on April 29th, and I took the same species on May 14th and one specimen on June 3rd, while one emerged from a pupa out of the pond on May 4th. Females of *Platetrum depressum* were on the wing in the district on May 14th, on which day *Agrion* [*Enallagma*] *cyathigerum* swarmed near the pond. Of the latter species I saw one or two specimens on June 3rd, a dull day, on which date I also took one *Agrion pulchellum* and one *A. puella* in the same place. In addition to the above I have bred two specimens of *Brachytron pratense*, a male on May 19th, and a female on May 24th, from pupæ taken from the Basingstoke Canal, near Byfleet, on March 23rd ult.—W. J. LUCAS; 2, Gordon Road, Kingston-on-Thames.

LEUCOPHASIA SINAPIS AND MELITÆA ARTEMIS IN CO. WATERFORD.—On May 16th I captured two very fresh specimens of *L. sinapis*. These are the first "wood whites" that I have seen here. I went again to the same place on the two following days, but saw no more. My friend Mr. R. Reynett took one specimen here five years ago. He has been successful in obtaining seven this year. On April 26th last I found, near here, three larvæ of *Melitæa artemis*. They were feeding on one of their food-plants, *Scabiosa succisa*. Two of them have already changed to pupæ. The third is now hanging suspended and doubled up, preparatory to its change.—(Rev.) WILLIAM W. FLEMING; Coolfin, Portlaw, Co. Waterford, May 22nd, 1894.

XYLOMIGES CONSPICILLARIS IN WORCESTERSHIRE.—On April 8th I bred a specimen of *X. conspicillaris* from a pupa dug in Worcestershire last autumn.—H. PERKS; 19, Barrett Street, Manchester Square, W.

COLIAS HYALE AT DOVERCOURT.—On May 13th inst., which was a bright warm day, I noticed one of these butterflies on the wing. It had apparently just come in from the sea.—GERVASE F. MATHEW; Dovercourt.

PACHETRA LEUCOPHÆA IN SURREY.—While collecting with the members of the South London Entomological and Natural History Society, at their field meeting at Reigate yesterday, I had the good fortune to take a female specimen of *Pachetra leucophæa* at rest on a bank side. The capture is interesting on account of being made in the same district, although not in the immediate neighbourhood, that Mr. Stevens met with the insect nearly forty years ago.—ROBT. ADKIN; Lewisham, June 10th, 1894.

STIGMONOTA RAVULANA IN LANCASHIRE.—My first excursion to Grange-over-Sands this year was on Saturday last, a bitterly cold and sunless day. No *Catoptria aspidiscana*, *Nepticulæ* or *Lithocolletis* were obtained, but by sweeping the birch twigs I captured plenty of *Phlæodes tetraquetra* and some odds and ends, among which I discovered on closer examination, when I arrived home, one specimen of *S. ravulana*.—J. B. HODGKINSON; Rosebery House, Ashton-on-Ribble, May 21st, 1894.

VANESSA CARDUI COMMON AT TENBY.—I am pleased to see hibernated *V. cardui* about this year in great numbers; they are by far the most plentiful butterfly here at present; in fact, on some parts of the railway banks they simply swarm, a great contrast to last year, during which I saw but two specimens. Of *Colias edusa* I have not seen one this year so far,



Insects, taken all round, are scarce here this season, and rather backward; however, on the oaks close to this, larvæ were fairly plentiful, chiefly *Taniocampa stabilis*, *T. cruda*, and *T. miniosa* (which occurred also frequently on bramble, and a few on honeysuckle), and many common geometers.—SPOTSWOOD GRAVES; 29, Victoria Street, Tenby, June 14th, 1894.

DEILEPHILA LIVORNICA IN DEVONSHIRE.—On the evening of June 7th I captured a specimen of *D. livornica* flying round the flowers of rhododendrons.—JOHN N. STILL; Horrabridge.

EARLY APPEARANCE OF SMERINTHUS TILÆ.—On April 26th a fine specimen of this moth was taken, freshly emerged, in the Shooters Hill Road, and is now in my collection. As far as personal observation goes, I have found it scarce round here, and never so early as this date.—J. N. SMITH; 30, Shooters Hill Road, Blackheath, S.E., April 30th, 1894.

HETEROCERA FROM CAUSSOLS, ALPES-MARITIMES.—One of the insects which I thought was probably referable to *Lithosia lurideola* (Entom. 178) has been submitted to Herr Ernst Heyne, of Leipzig, who has identified it as *L. complana*. *Aporophyla lutulenta* var. *sedi*, also determined by Herr Heyne. *Bombyx quercus* and *B. rubi* (larva) are also additions to the list.—F. BROMILOW; Nice, Alpes-Maritimes, France, May 6th, 1894.

THE HEMIPTERA-HETEROPTERA OF PURFLEET, ESSEX.—After having worked this neighbourhood for several years during the months of August and September, I am able to furnish the following list, which I believe to be correct as far as it goes. Only single examples have been captured of those species marked with an asterisk:—*Eurygaster maura*, *Sehirus bicolor*, *S. albomarginatus* (two dead specimens), *Ælia acuminata* (one imago and larva together), *Tropicoris rufipes*,\* *Verlusia rhombea*,\* *Myrmus miriformis*, *Scolopostethus affinis*, *Drymus sylvaticus*, *Stygnocoris rusticus*, *Piesma quadrata*, *P. capitata*,\* *Monanthia ampliata*, *Derephysia foliacea*, *Miris calcaratus*, *Megaloceresa erratica*, *M. longicornis*, *M. ruficornis*, *Teratocoris saundersi*,\* *Leptoterna dolabrata*, *L. ferrugata*, *Pantilius tunicatus*, *Phytocoris longipennis*, *P. reuteri*, *P. varipes*, *P. ulmi*, *Oncognathus binotatus*, *Calocoris infusus*, *C. chenopodii*, *C. bipunctatus*, *Rhopalotomus ater*, *Capsus laniarius*, *Liocorus 3-pustulatus*, *Pæciloscytus nigrinus*,\* *Hadrodema pinastri* (two specimens), *Plesiocoris rugicollis*,\* *Lygus pratensis*, *L. pabulinus*, *L. viridis*, *L. kalmii*, *L. cervinus*, *Camptobrochis lutescens*, *Monalocoris filicis*, *Pithanus maerkeli*, *Campyloneura virgula*, *Ætorrhinus angulatus*, *Chlamydatus ambulans*, *Byrsoptera rufifrons*, *Dicyphus pallicornis*, *D. pallidus*, *D. constrictus*, *Malacocoris chlorizans*, *Pilophorus clavatus*, *P. bifasciatus*, *Halticus luteicollis*, *H. apterus*, *Orthocephalus saltator*, *Loxops coccineus*,\* *Orthotylus bilineatus*, *O. nassatus*, *Heterotoma merioptera*, *Macrocoleus hortulanus*, *H. molliculus*, *Oncotylus decolor*,\* *Phylus coryli*, *P. avellanæ*, *Psallus salicellus*, *Plagiognathus viridulanus*, *P. arbustorum*, *Acompocoris pygmaeus*, *Acanthocoris nemorum*, *A. nemoralis*, *Piezostethus galactinus*, *Thripheps minuta*, *Lyctocoris campestris*, *Acanthia lectularia*, *Ploiaria vagabunda*, *Nabis brevipennis*, *N. lativentris*, *N. major*, *N. flavomarginatus*, *N. limbatus*, *N. ferus*, *N. rugosus*, *Salda cocksi*, *Hydrometra stagnorum*, *Gerris thoracica*, *G. lacustris*, *Velia currens*, *Notonecta glauca* (var. *maculata*), *Nepa cinerea*. On June 3rd, 1893, I took the following, which are not mentioned above:—*Lygus contaminatus*, *Psallus betuleti*, *P. ambiguus*, *P. varians*, *P. alnicola* (?).—R. M. LEAKE; 15, Allyn Park, S.E., June, 1894.

NOTES FROM HANTS.—The following species seem to have been early on the wing this year:—*Euchloë cardamines* and *Lycæna argiolus*, April 13th; *Asthenes candida*, 15th; *Pieris brassicæ*, and *Bapta bimaculata* (= *taminata*), 16th.—W. M. CHRISTY; Watergate, Emsworth, Hants.

CAPTURES IN OXFORDSHIRE.—On May 25th I succeeded in capturing five freshly emerged specimens of *Nemeobius lucina* in Bagley Woods, near Oxford. In the same place I came across larvæ of *Tethea retusa* and *Taniocampa miniosa* in abundance. I have been up since with a friend beating for larvæ, and we obtained *Thecla quercus*, *Pæcilocampa populi*, *Dasychira fascelina*, *Hylophila bicolorana* (= *Halias quercana*), &c. The trees are absolutely stripped by *Cheimatobia brumata*, *Taniocampa gothica*, *Calymnia trapezina*, *Hybernia defoliaria*, *Phigalia pedaria* (= *pilosaria*) and numerous other larvæ.—H. W. SHEPHEARD-WALWYN; Hertford College, Oxford, June 4th, 1894.

CAPTURES IN ARGYLLSHIRE.—A considerable number of larvæ of *Melitæa artemis* taken April 15th, on rough pasture land close to the sea (Sound of Jura), feeding on devil's-bit scabious. The first perfect insect emerged June 7th, having attained the chrysalis stage May 9th. A few larvæ are still feeding. *Thecla rubi* has been very abundant here; also *Argynnis euphrosyne*. April 25th, *Macroglossa stellatarum*; 13th, *Phlogophora meticulosa* (abundant); 22nd, *Numeria pulveraria*; 23rd, *Panagra petraria*; 29th, *Melanippe hastata*. June 6th, *Arctia fuliginosa*. Larvæ of *Bombyx quercus* plentiful on heather.—(Miss) M. L. COTTINGHAM; Kilberry, Argyllshire, June 10th.

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## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—June 6th, 1894.—Henry John Elwes, Esq., F.L.S., President, in the chair. Dr. K. Jordan, of "The Museum," Tring, and the Honble. Nathaniel C. Rothschild, of Tring Park, Tring, were elected Fellows of the Society. Mr. W. F. H. Blandford exhibited a series of eleven male specimens of *Rhina barbirostris* from British Honduras, of which the largest and smallest examples measure respectively 60 and 17 mm. The difference in bulk, supposing the proportions to be identical, is as 43 to 1. He remarked that this variation of the size is especially common in the Brenthidæ, Cossonidæ, and other wood-boring Coleoptera. The President, Dr. Sharp, the Rev. Canon Fowler, Mr. Jacoby, the Honble. Walter Rothschild, Mr. Merrifield, and Mr. Champion took part in the discussion which ensued. Mr. A. J. Chitty exhibited specimens of *Cardiophorus equiseti* taken near Branton, on the north coast of Devon, in May, 1891. Mr. Champion and Mr. Blandford made some remarks on the species. Mr. McLachlan exhibited, for Mr. J. W. Douglas, male specimens of a Coccid (*Lecanium prunastri*), bred from scales attached to shoots of blackthorn (*Prunus spinosa*) received from Herr Karel Sulç, of Prague. Mr. Douglas communicated notes on the subject, in which he stated that the species was common on blackthorn in France and Germany, and should be found in Britain.



Lord Walsingham exhibited a series of *Cacoecia podana*, Scop., reared from larvæ feeding on *Lapageria* and palms in Messrs. Veitch's conservatories in King's Road, Chelsea, including some very dark (melanic) varieties. The Honble. Walter Rothschild stated that he had taken the species on lime. Mr. Hampson and Mr. Tutt also made some remarks on the habits of the species. Mr. C. Fenn exhibited a long series of *Selenia lunaria*, bred from one batch of eggs, which included both the spring and summer forms; and also two unforced specimens, which emerged in November. He remarked that the variation between the two emergences, viz., spring and summer, is considerable, and also the range of variation *inter se*, especially in the spring form; but it is very remarkable that the summer form has one or two representatives among the specimens of the spring emergence. He said that the parent female was taken at Bexley in May, 1893. Mr. F. Lovell Keays exhibited, on behalf of Mr. A. Lovell Keays, a variety of *L. alearis* (female), having the marginal ocelli on the hind wings entirely without the usual orange-coloured lunules. The specimen was captured at Caterham on May 22nd, 1894, and was the first example of the species observed by the captor this season. Mr. Barrett made some remarks on the specimen. Mr. J. H. Durrant exhibited a series of *Steganoptycha pygmæana*, Hb., taken at Merton, Norfolk, between the 25th March and the middle of April last. Lord Walsingham made some remarks on the species. Mr. H. Goss read an extract from a report from Mr. J. R. Preece, H.M. Consul at Ispahan, to the Foreign Office, on the subject of damage caused to the wheat crop in the district of Rafsinjan, by an insect which was called "Sen" by the natives, and which he described as "like a flying bug, reddish olive in colour, with heavy broad shoulders." Mr. Goss said he had been asked by Mr. W. H. Preece, C.B., to ascertain, if possible, the name of the species known to the natives as "Sen." Dr. Sharp said that in the absence of a specimen of the insect it was impossible to express an opinion as to the identity of the species. The Rev. Canon Fowler exhibited, for Miss Ormerod, specimens of *Diloboderus abderus*, Sturm, *Eucranium arachnoides*, Brull., and *Megathopa violacea*, Blanch., which she had received from the La Plata district of the Argentine Territories, where they were said to be damaging the grass crops. He also read notes from Miss Ormerod on the subject. Mr. Hampson raised an important point as to what was the legal "date of publication" of Part I. of the Transactions of the Society, 1894. He pointed out that the question of the priority of the names of certain new species described therein would depend upon the date of publication. A long discussion then ensued, in which Dr. Sharp, the Honble. W. Rothschild, Mr. Goss, Mr. McLachlan, Lord Walsingham, Prof. Poulton, and Mr. Verrall took part. Prof. Franz Klapálek, of Prague, communicated a paper entitled "Descriptions of a new species of *Liaphidia*, L., and of three new species of Trichoptera from the Balkan Peninsula, with critical remarks on *Panorpa gibberosa*, McLach." Lord Walsingham then took the chair, and a Special General Meeting convened under Chap. XVIII. of the Bye-Laws was held.—H. Goss & W. W. FOWLER, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*Whitsuntide Excursion*, 1894. A small party from this Society spent from May 12th to 15th in the neighbourhood of Selsley, on the Cotswolds. In consequence of the unfavourable weather the collections made were below expectations, and consequently there was some disappointment. The lepidopterists took numbers of larvæ of *Callimorpha dominula*, *Nemeophila plantaginis*, *Nudaria mundana*, &c., and found *Nemeobius lucina* and other insects on the wing, but nothing of importance. The hymenopterists were well satisfied with their captures; and although the dipterists, owing to want of sun, took comparatively little of interest, yet they succeeded in adding two new species of *Syrphus* to the British list, Mr. R. C. Bradley taking one specimen of *Syrphus triangulifer*, Zett., and Mr. C. J. Wainwright one of *S. annulipes*, Zett. On the Monday a drive to Cranham Woods was taken, in the company of two local entomologists, Messrs. Frank Stephens and R. W. Fitzgerald; and on the way back tea was taken at the house of Mr. C. J. Watkins, Painswick, and two hours profitably spent in an examination of his collections of Diptera, Hymenoptera, &c.

May 21st.—Mr. G. T. Bethune-Baker, Vice-President, in the chair. Exhibits:—Mr. W. Harrison, living larvæ of *Callimorpha dominula* taken during the Society's excursion to Selsley-on-the-Cotswolds. Mr. A. H. Martineau, pupæ of *Crabro interruptus*, dug out of an old rotten stump at Middleton. Mr. P. W. Abbott read a paper upon the genus *Hadena*, in which he dealt with:—1st. The position of the genus, which he considered should follow *Apamea*. 2nd. The distribution of the genus in our own district; he only knew of the occurrence of eight species, though *suasa* and *trifolii* might have to be added. 3rd. Variation, which he described at some length; generally concluding that it was not a variable genus. 4th. Life-history; describing the life-history of *glauca*, which he knew well in Sutton Park, at some length. He showed the drawer from his cabinet containing the genus, and other members also showed specimens.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LEICESTER LITERARY AND PHILOSOPHICAL SOCIETY (Entomological Section).—*February 27th*, 1894.—W. A. Vice, Esq., M.B., in the chair. Exhibits:—Mr. C. B. Headly, larvæ of *Estrus bovis*. Mr. F. Bouskell, life-histories, with ova, larvæ, pupæ and imagines, of *Bombyx neustria*, *B. quercifolia*, *Orgyia antiqua*, *Biston hirtaria* and *Papilio machaon*; and he recommended the formation of local and British collections by the section, showing, where possible, the life-histories. In reply to an inquiry as to the best means of dealing with the onion grub, which is very prevalent in the district, the cultivation of onions in trenches, and covering up of the bulbs according to Miss Ormerod's plan, was recommended.

April 2nd.—W. A. Vice, Esq., in the chair. The Hon. Sec. read the report of the Easter excursions to Charnwood Forest, the chief captures being *Brephos parthenias* (in good condition, out fourteen days earlier than last year); *Cymatophora flavicornis* (one at rest, and one on the wing in the bright sunshine), *Hybernia leucophæaria*, *H. progemma*, *Anisopteryx æscularia*; at sallow, *Pachnobia rubricosa* (11), *Teniocampa gothica*, *T. stabilis*, *T. instabilis* (very variable), *T. pulverulenta*, *T.*



*gracilis* (1), *T. munda* (2), *Cerastis vaccinii* (8, exceedingly variable), *Scopelosoma satellitia* (11, variable), *Xanthia ferruginea* (1), Coleoptera:—*Rhagium inquisitor* (8) and a number of larvæ out of an old stump, *Ips 4-guttata* (plentiful under bark), *I. 4-pustulata* (at sap), *Rhizophagus dispar*, *R. bipustulatus*, *Rhinosinus planirostris*, *Ilybius ater*, *I. obscurus*, *Acilius sulcatus*. Exhibits:—Mr. Moss, *Sinodendron cylindricum*, *Dorcus parallelepipedus*, *Barynotus obscurus*, *B. schonherri*, *B. mareus*, from near Loughborough; larvæ of *Acherontia atropos*, *Smerinthus ocellatus*, *Chærocampa elpenor*, *Cossus ligniperda*, *Bombyx quercus*, *Noto-donta ziczac*, *N. dictæa*, all from the same district. Mr. Dixon, *B. parthenias*, *Amphidasys prodromaria* (dark form), and *T. leucophæaria*. Mr. Scott, very variable series of female *Lycæna alexis*, also Lepidoptera from the South of France. Mr. Bouskell, series of *Nyssia hispidaria* from Buddon Wood, all taken on oak-trunks within twelve inches from the ground, none being found higher up; also an exceedingly variable series of *H. leucophæaria*, with several melanic and light forms; ova of *T. stabilis*, *T. instabilis*, *T. rubricosa* and *B. parthenias*. Mr. Headly, larvæ of *Cymatophora ridens*, *Cucullia verbasci*; imagines of *C. ridens*, *C. or*, *Brephos notha*, and *Monochammus sartor*; the last named was taken in Leicester on a willow trunk. The Secretary then read a short paper "On the British Micro-Lepidoptera," by the Rev. C. T. Cruttwell, M.A. A long discussion ensued, in which the chairman, Messrs. Moss, Scott, Dixon, Headly, and Bouskell joined. A hearty vote of thanks to the author was passed, and it was resolved to print the paper in the Transactions. Two excursions were arranged, April 14th, Bardon Hill; and April 28th, Narborough Bogs. The next meeting was fixed for April 30th.—FRANK BOUSKELL, *Hon. Sec.*

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## RECENT LITERATURE.

*Alternating Generations: a Biological Study of Oak-Galls and Gull-Flies.*  
By HERMANN ADLER, M.D. Translated and edited by CHARLES  
R. STRATON, F.R.C.S., F.E.S. 8vo, pp. xliii, 198. Oxford:  
Clarendon Press. 1894.

In addition to an excellent translation of Dr. Adler's remarkable work, Mr. Straton has prepared a copious introduction to the subject of alternation of generations; a chapter on *Cynips kollari*; a synoptical table of oak-galls; and a classified list of the Cynipidæ with their food-plants. There are three plates; one of these is anatomical, and on the others the various galls found on oak are represented in colour. These figures will enable anyone to readily identify any oak-gall he may meet with. We have no doubt this book will not only be of much value to all who study the British galls and the insects which produce them, but also be of great interest to many who may not have read the original monograph.

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*Monograph of the North American Proctotrypidæ.* By W. H. ASHMEAD.  
Washington. 1893.

THIS work, being the forty-fifth bulletin of the U. S. Nat. Mus., cannot fail to be of immense value to the student of the American fauna north of Mexico. The descriptions are good and accurate, and the drawings,—of which there are eighteen plates,—outlines of the various genera, will be sufficient to help even the field-worker to find at a glance any insect he requires.

Mr. Ashmead thinks that the Proctotrypidæ are not closely allied to the Chalcididæ, and with him I quite agree. They have more affinity with the parasitic Cynipidæ, and are not far removed from the Evaniidæ and Peleciniidæ.

In the Introduction directions are given as to distinguishing a Proctotrypid from the Chalcididæ and Aculeate Hymenoptera.

The life-history is graphically described, and the distribution of the family shows that the author is not unacquainted with his subject.

The following analysis will give a faint idea of the construction of the work. The Proctotrypidæ are divided into ten subfamilies:—(1) Bethylinæ, (2) Emboleminæ, (3) Dryininæ, (4) Proctotrypinæ, (5) Ceraphroninæ, (6) Belytinæ, (7) Diapriinæ, (8) Platygasterinæ, (9) Scelioninæ, (10) Helorinæ.

The first subfamily contains seventeen genera, two being new, *Dissomphalus* and *Lælius*. Emboleminæ consists of three genera, one described as new, *Ampulicomorpha*. The third family consists of nine genera, two being new, *Bocchus* and *Phorbas*. The Ceraphroninæ are divided into two tribes—(1) *Megaspilini*, founded upon “marginal vein stigmated, antennæ with same number of joints in both sexes, 11-jointed”; and (2) *Ceraphronini*, “marginal vein not stigmated, linear antennæ with a less number of joints in the females than in the males; males 10- or 11-jointed, females 9- or 10-jointed.” The former contains nine genera, the latter three, one being new, *Neoceraphron*. The Scelioninæ are divided into four tribes—(1) *Telenomi*, (2) *Bæini*, (3) *Teleasini*, (4) *Scelionini*. The first contains six genera, three, *Trissolcus*, *Dissolcus*, *Aradophagus*, being new. The second consists of five genera, one being new, *Ceratobæus*. The third contains seven genera, one new, *Hoplogyron*. The last section contains nineteen genera, the following being new:—*Calliscelio*, *Chromoteleia*, *Opisthacantha*, *Lapitha*, *Hoploteleia*, *Cremastrobæus*, *Acanthoscelio*, *Sceliomorpha*. The Platygasterinæ are divided into two tribes—*Inostemmini*, “anterior wings with a distinct clavate submarginal vein”; *Platygasterini*, “anterior wings entirely veinless, rarely with indications of a submarginal vein, which if present is very short and never clavate.” The first section contains seven genera, the second seventeen, two being new, *Cælopelta* and *Eritrissomerus*. Proctotrypinæ contains three genera—*Disogmus*, Forst., *Proctotrypes*, Lat., and *Codrus*, Jur. The Belytinæ contains nineteen genera, whilst the Diapriinæ are divided into two tribes—*Spilomicrini*, “submarginal reaching the costa at about half of the wing or a little before, costal cell most frequently closed”; *Diapriini*, “submarginal vein never reaching the costa beyond one-third of the wing; costal cell most frequently open.” The former consists of twelve genera, three being new, *Hemilexodes*, *Tropidopsis*,



and *Holopria*; the second contains eleven genera, five being new, *Tropidopria*, *Ceratopria*, *Trichopria*, *Phanopria*, and *Myrmecopria*. The last subfamily, *Helorinæ*, is formed for the reception of the single genus *Helorus*, Latr.

In addition to the descriptive matter, a good analytical table of the species belonging to each genus is given.

All students of this interesting family must be indeed thankful to Mr. Ashmead for assisting their studies by his valuable analytical tables in the letterpress.

JOHN W. SHIPP.

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### OBITUARY.

With much regret we record the death of JAMES TRIMMER WILLIAMS, at his residence, St. Margaret's Bay, Dover, on May 31st, aged sixty. His early life was spent in active business, and on his retirement, some six years ago, he took up his residence at the above-mentioned quiet Kentish village, his chief object in seeking so secluded a spot apparently being a desire to follow more closely the study which had afforded him so much pleasure in his busier days, and for a time his attention was centred on the Lepidoptera of the district, of which he amassed a considerable collection. Unfortunately his retirement was of short duration; some eighteen months since he suffered a severe shock to the system, from which he never thoroughly rallied, the immediate cause of death being effusion of blood to the brain. He was an occasional contributor to the pages of this Journal, a member of the South London Entomological Society from the year of its commencement in 1872, and filled the office of President in 1878. Always a genial companion, he will be missed by a large circle of friends.—(R. A.)

We also regret to announce the death of Mr. GEORGE BARNARD, of Coomooboolaroo Station, near Duaringa, which took place at Launceston, on March 11th, 1894. Mr. Barnard was born at Chislehurst, England, in 1830, and was the eldest son of William Barnard, a captain in the merchant service, who, in his young days, served as a midshipman in the Royal Navy. Mr. Barnard was one of the most successful entomologists and oologists in the Australian colonies, his collection of insects and birds' eggs being considered by experts to be two of the finest private collections in the southern hemisphere. This collection had increased to such an extent in 1891 that he built a private museum at the station, and found it none too large. He had for many years been in constant communication with Dr. Livett, Mr. Meyrick, and several leading entomologists and naturalists in England, France, India, Chili, and Finland, as also with the principal curators of Australian museums, and by this means had been enabled to add very materially to the beauty and variety of his collections by exchanges. He was much assisted by his children, who from infancy took an interest in his pursuits, and by his clever and talented wife, who, with her paint brush and pencil, has often reproduced some rare specimen while its brilliant colours were fresh.

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[No. 375.]

## LAMELLICORN BEETLES ON PASTURAGE IN THE ARGENTINE TERRITORIES.

By ELEANOR A. ORMEROD, F.E.S.



E.C.K.

1, *Euoranium arachnoides*, life-size; 2, 3, *Megathopa violacea*, life-size, and magnified.

THE following observations regarding damage caused to pasturage by infestation of Lamellicorn beetles, in the Argentine Territories of South America, are offered in the hope that readers who have more especially studied the habits of exotic Coleoptera may possibly be good enough to furnish some additional details of life-history of one or other of the species named, which may aid in checking their increase.

On May 7th reports were placed in my hands by Mr. Henry Watts, Secretary of the South American Land Company, relative to damage caused to pasturage on the enclosed ground of the Company, by a white grub feeding at certain seasons at the roots of the grasses. This attack, it was mentioned, was only, or almost entirely, observable on the fenced-in land on which sheep, cattle, and horses are pastured, and in one of the reports from the resident Manager or representatives of the Company it was



mentioned that one-third of the fenced-in camp, or about 40,000 acres, might be estimated as having the grass destroyed by injury at the roots. In another report sent somewhat later, bearing date March 21st, 1894, it is mentioned that nearly half the "camp" must have suffered.

The reports noted, amongst other points, "Every year we have a good crop of beetles, which at certain seasons you find travelling along the cattle-tracks in hundreds; it appears to be from their eggs that the white grub comes, and a dry season seems to favour their growth. They select the higher lands, where they have literally dug up the earth, leaving it as loose as if a spade had been used. They work within a couple of inches of the surface, eating the roots of all the grass they find, so the pasture withers away and dies out, leaving the ground as if it had been hoed."

"Later on," it is mentioned, the grub "turns into a kind of horned beetle, thousands of which appear on the surface, and coming out of the ground where the grub was numerous leads to the belief that the one develops into the other."

The grubs, of which specimens were sent me, ranging in size from about a quarter-grown, to an inch and a half, the greatest length named in the written communication, were obviously larvæ of some Lamellicorn beetles, fleshy, cylindrical, with reddish head, a pair of rather long hairy legs on each of the segments next the head, and the caudal extremity blunt and enlarged.

Of the beetles sent me all the collection (with the exception of two specimens) proved to be males and females of the "horned beetle" mentioned as coming up by "thousands" out of the grub-ravaged pasture ground, and this on examination proved to be the *Diloboderus abderus*, Sturm.\* Of these the males are thick-made, oval beetles, about ten lines long, and five and a half across, black, with a kind of grey hoariness; the head furnished with a long, pointed, curved-back horn, and the thorax with a short, thick, and broad horn-like process, bifid at the extremity and pointing forward, and furnished on the under side with a short thick yellow silky fringe. The females are distinguishable by the absence of the horns.

The accompanying figure, drawn from the specimens sent, gives a very fair idea of the appearance of these beetles, and also of the Lamellicorn larvæ, of which specimens were sent from the infested ground.

Here, however, a point occurs of very considerable agricultural importance, and which possibly the presence of the other beetles sent may throw some light on. It is noted in the reports sent over, that where this wide-spread grub-destruction of pasturage

\* For identification of these beetles and of the two other species named, as well as for copies of the original descriptions, I am indebted to Mr. Oliver E. Janson, F.E.S.

takes place, the bitter, or coarse and useless grasses disappear, and are replaced by better kinds, so that the nature of the pasturage is very greatly improved. On the face of the thing,



E.C.K.

1, *Diloboderus abderus*, male; 2, female; both magnified, with lines showing natural length. 3, Lamellicorn larva, from ground infested by *D. abderus*.

it does not seem clear why this should be from the effects of the damage caused by the infestation of the "horned beetle," the *Diloboderus abderus*. We know that others of the Dynastidæ, as, for instance, the so-called "Keever beetle," the *Heteronychus arator*, Fab., do much mischief at the roots of wheat crops in South Africa; and the *Pentodon nireus*, Burm., and *P. contractus*, Bohm, both of them Caffrarian beetles, were also sent over to me as wheat pests. But these destructive habits of the Dynastidæ scarcely seem to account for a different and a better kind of grass following on the ravaged area, and it does not appear to be merely a destruction of the grasses, *then present*, which is followed by presence of a better sort, as amongst the notes sent from the local representatives of the S. American Co. is the following:—"Strange to say, the grub has done almost no damage on burnt camp, the eggs having been probably destroyed by fire, so they will take a much longer time to refine than camp which is never burnt."

This suggests whether it is not possible that some of the damage, and much of the succeeding benefit may be owing to the presence of the Scarabæid beetles, of which specimens of two kinds were forwarded to me (but without any remarks on them) in the bottle with the other beetles and larvæ. These were the large *Eucranium arachnoides*, Brullé (the *Anomiopsis dioscorides* of Westwood\*), one of the so-called "Sacred beetles"; the other (also figured at p. 229) is the *Megathopa violacea*, Blanchard, found by M. d'Orbigny in Patagonia (D'Orbigny, 'Voyage dans l'Amérique Méridionale, Insectes Coléoptères,' par Blanchard).

Presuming these beetles to have the characteristic habits of

\* 'Trans. of Zool. Soc.' vol. ii., 1857, p. 160.



the family, this might account for the improved growth of grass. Whether their larvæ can take a part in the destruction, or are only manure feeders, I do not know; but if on the stock-pastured ground any appreciable amount of the Scarabæid beetles exercised their talents for rolling up their eggs in balls of dung, digging little holes, and then burying the egg-containing enrichment, this digging and manuring would be likely to help to a good succeeding growth in many agricultural ways, too long to enter on here.

As the Scarabæid specimens sent me were apparently not noticed as differing from the others in the samples forwarded, this may also have been the case on the open area, and the observations of beetles being found at certain seasons "travelling along the cattle-tracks in hundreds," point towards some special attraction, such as might be found by dung-rolling beetles, as these so-called "tracks" are the paths made by the cattle, horses, &c., in their passage to and from the wells or drinking places.

Such a peculiar and wide-spread coleopterous attack on pasturage appears worth recording entomologically, especially in the hope that those versed in the minutiae of extra-British Lamellicorn attack may throw some light on the details; but, failing this, the supply of specimens, and the further notes of observation which I understand I am, if possible, to be favoured with, may prove of a good deal of interest.

Torrington House, St. Albans, June 30th, 1894.

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## THE LEPIDOPTERA OF LINCOLNSHIRE.

By W. D. CARR.

THE following list of Macro-Lepidoptera (exclusive of the Geometræ) has been compiled during the last three seasons, and includes only those species I myself have taken or in a few instances seen in the cabinet of a friend.

The localities chiefly worked were Hartsholme, Skellingthorpe, and Newball Woods; the former wood is two miles south of Lincoln, the geological formation being drift gravels resting on middle lias clay, the trees chiefly Scotch fir, birch, oak, and alder, with a good deal of larch, Austrian pine, heather, and in places sallow. Skellingthorpe Wood is six miles west of Lincoln, on the lower lias clay; trees principally oak, birch, and elm. Newball Wood is eight miles north of Lincoln, on the Oxford clay; trees mainly oak and ash, with hazel undergrowth. In these two latter woods the stiff clays on which they are situate form a heavy, cold, and wet soil; these conditions, however,

seem suitable for the growth of many species of flowering plants, for in the spring and early summer months the wider rides are carpeted with flowers and animated with insect life. Here *H. paniscus* (*Carterocephalus palæmon*) is at home, and in the May sunshine is to be seen by scores, flitting from flower to flower of the bugle, or chasing his fellows along the grassy rides.

*Argynnis paphia*. Skellingthorpe; last year common first week in July. The variety *valesina* not seen.—*A. aglaia*. Skellingthorpe.—*A. euphrosyne*. Common at Newball, May 15th, and Skellingthorpe, May 18th, 1893.—*A. selene*. About as common as above; same localities and dates.

*Melitæa artemis* (*aurinia*). Scarce at Newball in May.

*Vanessa urticæ*. Common.—*V. polychloros*. Newball.—*V. io*. Lanes, &c.; not common.

*Pyrameis atalanta*. Common in 1892; scarce last year at Lincoln, but fairly common on sand-hills near Skegness last August.—*P. cardui*. Common in 1892; rare last year.

*Apatura iris*. Seen both in Newball and Skellingthorpe Woods, but not taken.

*Melanargia galatæa*. Common in a meadow near Newball four or five years ago.

*Pararge egeria*. Common near Lincoln and Woodhall Spa last August.

*Epinephele ianira*. Hartsholme, &c.—*E. tithonus*. Scarce.—*E. hyperanthus*. Abundant at Skellingthorpe in July.

*Cæonympha pamphilus*. Common near Hartsholme and Newball.

*Thecla w-album*. Netted imago Aug. 6th, 1892; obtained full-fed larvæ and pupæ last year, May 27th, on elm.

*Polyommatus phlæas*. Common.

*Lycæna icarus*. Very common at Newball; less common, Skellingthorpe.

*Colias edusa*. A few taken near Hartsholme, 1892.

*Gonopteryx rhamni*. Rather scarce.

*Anthocharis cardamines*. Newball and Skellingthorpe.

*Pieris napi*, *P. rapæ*, *P. brassicæ*. Common.

*Hesperia* (*Nisoniades*) *tages*. Common at Newball and Skellingthorpe in May.—*H. paniscus* (*Carterocephalus palæmon*). Abundant at Newball; common at Skellingthorpe in May.—*H. sylvanus*. Newball and Skellingthorpe.—*H. linea* (*thaumas*). Roadsides.

*Smerinthus ocellatus*. Larvæ common on willows, Hartsholme.—*S. populi*. Common.—*S. tilia*. Does not occur in the Lincoln neighbourhood, but I am informed that larvæ were taken from a lime-tree some few miles away, about ten years ago, and the insect bred in Lincoln.

*Acherontia atropos*. Larvæ occasionally found in potato-fields.

*Sphinx convolvuli*. Several were obtained about five years ago, but I have no more recent record.—*S. ligustri*. Rare.

*Charocampa celerio*. A friend (Mr. E. Mead) obtained a single example of this rare moth a few years ago, which had flown into a cottage near Lincoln.—*C. porcellus*. One netted near Hartsholme in 1892.—*C. elpenor*. Larvæ rather common (1892) on bedstraw growing in wide drain; one imago netted.



*Macroglossa stellatarum*. Occasionally seen last season in gardens; larvæ discovered on yellow bedstraw.—*M. fuciformis*. Larvæ common on honeysuckle, Skellingthorpe, Newball, and Hartsholme; imagines taken at flowers of bugle and rhododendron in bright sunshine.—*M. bombyliiformis*. Rare at Newball.

*Sesia (Trochilium) bembeciformis*. Rare.—*Sesia (T.) apiformis*. Rare.  
*Zeuzera æsculi*. Rare.

*Cossus ligniperda*. Moth seldom seen; the only one I have came to a patch of sugar, and was netted. Many larvæ in willows.

*Hepialus hectus*, *H. lupulinus*, *H. sylvanus*, *H. humuli*. Hartsholme.

*Procris (Ino) statices*. Newball.

*Zygæna filipendulæ*. Lincoln; Newball.

*Lithosia mesomella*. Hartsholme; scarce.—*L. (Gnophria) quadra*. Hartsholme; scarce.—*L. (G.) rubricollis*. Newball, May 22nd, 1893; two specimens.

*Euchelia jacobææ*. Lincoln; at Skegness the ragwort on sand-hills is stripped by the larvæ.

*Chelonia (Nemeophila) plantaginis*. Larvæ common at Hartsholme in May.

*Arctia caia*. Not very common.

*Spilosoma fuliginosa*. Hartsholme.—*S. mendica*, *S. lubricipeda*, *S. menthastri*. Lincoln, &c.

*Liparis (Porthesia) auriflua*. Common.

*Leucoma salicis*. Larvæ on poplar; not common.

*Psilura monacha*. Skellingthorpe.

*Dasychira pudibunda*. Hartsholme.—*D. fascelina*. Has been taken at Hartsholme some years ago.

*Orygia antiqua*. Common.

*Demas coryli*. Newball; rare.

*Trichiura crategi*. Newball.

*Pæcilocampa populi*. Skellingthorpe; Hartsholme.

*Eriogaster lanestris*. Lincoln; Newball.

*Bombyx rubi*. Rare at Hartsholme; larvæ used to be common.—

*B. quercus* and var. *callunæ*. Both at Hartsholme.

*Odonestis potatoaria*. Lincoln, &c.; common.

*Saturnia pavonia*. Hartsholme; on heath.

*Platypteryx (Drepana) lacertula*. One specimen, Hartsholme, 1892.—*P. (D.) falcula*. Common at Hartsholme.—*P. (D.) hamula*. One specimen, Hartsholme, in 1892.

*Cilix spinula*. Hartsholme.

*Dicranura furcula*. Pupæ obtained under willow-bark; rather scarce.—*D. bifida*. Pupæ obtained under the bark of aspen; rare.—*D. vinula*. Common.

*Phalera bucephala*. Larvæ common on sallows.

*Ptilodontis (Pterostoma) palpina*. One obtained from dug pupa; Lincoln.—*P. (Lophopteryx) camelina*. Common.

*Notodonta dictæa*. A few larvæ taken each season, on poplar.—*N. dictæoides*. Commoner than above, but larvæ difficult to rear; Hartsholme, on birch.—*N. dromedarius*. Larvæ taken on birch and alder; scarce.—*N. siczac*. Larvæ generally found on small black poplars.

*Diloba cæruleocephala*. Larvæ common on whitethorn.

*Thyatira derasa*. Hartsholme.—*T. batis*. Hartsholme. According

to southern lists this species would appear to be double-brooded; it is certainly not so in Lincolnshire. Taken at sugar in June.

*Cymatophora (Asphalia) diluta*. One specimen, Hartsholme; common at Skellingthorpe in August, at sugar.—*C. or.* Newball, at sugar, May 23rd, 1893.—*C. (A.) flavicornis*. Hartsholme; common on the trunks and boughs of birch in March. Most text-books state that this species comes freely to sugar, but I have never been able to so obtain it, though have frequently sugared where I knew it to be.

*Bryophila perla*. Common on walls.

*Acronycta psi*. Common.—*A. leporina*. Hartsholme.—*A. megacephala*. Pupæ obtained when barking willows for “kittens.”—*A. alni*. Hartsholme; two or three pupæ obtained every winter by splitting decayed twigs and branches of alder.—*A. rumicis*. Common.

*Leucania conigera*. Lincoln; netted in July flying over blossoms of snowberry.—*L. lithargyria*. Taken with above.—*L. comma*. Lincoln; at sugar in June.—*L. straminea*. Two specimens, taken from flowers of bulrush.—*L. impura*, *L. pallens*. These two species are very common on flowers of bulrush, and on flower-spikes of a very coarse grass growing in a ballast pit.

*Nonagria typhæ (arundinis)*. Pupæ common in stems of reed-mace.

*Calamia phragmitidis*. Lincoln, on flowers of purple loosestrife.

*Tapinostola fulva*. Lincoln.

*Chortodes (Miana) arcuosa*. Lincoln; common on coarse grasses.

*Gortyna flavago (ochracea)*. Pupæ common in stems of marsh thistle.

*Hydræcia nictitans*. At flowers of ragwort.—*H. micacea*. At light and sugar.

*Xylophasia rurea*. At sugar.—*X. lithoxylea*. At sugar.—*X. sublustris*. At sugar; one specimen only.—*X. polyodon (monoglyphæ)*. Swarms at sugar; only one black variety taken.

*Neuria saponariæ (reticulata)*. Lincoln. Two specimens at sugar, 1892.—*N. (Neuronia) popularis*. At light. Came commonly into our sitting-room near Skegness last August.

*Charæa graminis*. At flowers of ragwort, or flying low over grass.

*Cerigo cytherea (matura)*. Hartsholme; at sugar in July.

*Luperina testacea*. Hartsholme.

*Mamestra brassicæ*. Common.—*M. persicariæ*. Not common; have taken but two specimens of this moth.

*Apamea basilinea*. Lincoln; common at sugar.—*A. gemina*. Common at sugar.—*A. unanimis*. Common at sugar in 1892; not seen last year.—*A. oclea (didyma)*. Common.

*Miana strigilis*. Very common; many handsome varieties.—*M. fasciuncula*. Common and various.—*M. literosa*. Rare.—*M. furuncula (bicoloria)*. Rare.

*Grammesia trilinea*. Common at sugar in 1891; scarce since.

*Caradrina morpheus*. Lincoln; rare.—*C. cubicularis (quadripunctata)*. Near Skegness; came rather freely to sugar in August.

*Rusina tenebrosa*. Lincoln; netted hovering over flowers of snowberry.

*Agrotis valligera (vestigialis)*. Near Skegness; taken at sugar in August.—*A. suffusa*. Same time and place as preceding species.—*A. saucia*. Lincoln, &c.—*A. segetum*. Lincoln; very common near Skegness last August.—*A. exclamatoris*. Common at sugar.—*A.*



*corticea*. Lincoln. — *A. tritici*. Lincoln; not common. — *A. obelisca*. Lincoln, at sugar; rare. — *A. porphyrea (strigula)*. Lincoln, at sugar; larvæ on heath in March and April.

*Triphana ianthina*. Lincoln; a few at sugar last year only. — *T. fimbria*. Lincoln and Skellingthorpe; generally rare; rather abundant last year. — *T. interjecta*. Hartsholme; very rare. — *T. orbina (comes)*. Common. — *T. pronuba*. Swarms at sugar.

*Noctua augur*. Lincoln, Hartsholme, &c.; larvæ common on willows in April, also on black currant and birch. Feeds at night. — *N. plecta*. Lincoln, &c., at sugar. — *N. c-nigrum*. Lincoln; swarmed at sugar in August at Skegness. — *N. brunnea*. Hartsholme; larvæ on willows in April. — *N. rubi*. Lincoln; Skegness. — *N. umbrosa*. Lincoln; rather scarce. Netted flying over rough grasses. — *N. xanthographa*. Very common.

*Trachea (Panolis) piniperda*. Lincoln, at willows and sugar, March and April; larvæ feeding on Austrian pine.

*Teniocampa gothica*, *T. (Pachnobia) rubricosa*, *T. instabilis (incerta)*, *T. stabilis*. At willow blossom and sugar. — *T. gracilis*. Rather rare, at willow blossom. — *T. cruda*. Rather common, at willows.

*Orthosia upsilon*. Lincoln; rare. — *O. lota*, *O. macilenta*. Hartsholme; a few at sugar each autumn.

*Anchocelis rufina*. Hartsholme and Skellingthorpe; common last year at latter place. — *A. pistacina*. Common. — *A. litura*. Common.

*Cerastis vaccinii*. Abundant. *C. spadicea*. Common.

*Scopelosoma satellitia*. Common.

*Xanthia citrago*. Skellingthorpe; not common. — *X. cerago*. At rest on willows. — *X. silago*. On willows and at sugar. — *X. ferruginea*. Common at sugar.

*Eupheria fulvago (Cosmia paleacea)*. Skellingthorpe.

*Cosmia (Calymnia) trapezina*. Common.

*Dianthæcia capsophila*, *D. capsicola*, *D. cucubali*. Lincoln; rare.

*Hecatera serena*. Rather scarce.

*Polia flavicincta*. Not common.

*Epunda nigra*. Hartsholme; scarce.

*Miselia oxyacantha*. Hartsholme; common.

*Agriopsis aprilina*. Common at Skellingthorpe.

*Phlogophora meticulosa*. Hartsholme; rare. Swarmed at sugar near Skegness in August last.

*Euplexia lucipara*. Rather scarce.

*Aplecta nebulosa*. Hartsholme.

*Hadena adusta*. Rather common. — *H. protea*. Common. — *H. dentina*. Scarce. — *H. oleracea*. Common. — *H. pisi*. Larvæ fairly common. — *H. thalassina*. Common.

*Xyllocampa lithorkiza (areola)*. Hartsholme.

*Calocampa vetusta*. Hartsholme; only one specimen known. — *C. exoleta*. Common.

*Cucullia umbratica*. Hartsholme; rather rare.

*Anarta myrtilli*. Hartsholme.

*Heliodes arbuti (Heliaca tenebrata)*. Newball and Skellingthorpe.

*Brephos parthenias*. Hartsholme and Skellingthorpe.

*Abrostola triplasia (Habrostola tripartita)*. Lincoln; rare.

*Plusia chrysitis*. Common. — *P. festuca*. Lincoln; netted in June.

Several fresh specimens at sugar near Skegness in August.—*P. iota*. Rather common.—*P. gamma*. Common.

*Gonoptera libatrix*. Rather common.

*Amphipyra pyramidea*. Hartsholme; one specimen, end of July. Afterwards found to be common at Skellingthorpe in August.—*A. tragopogonis*. Lincoln and Hartsholme.

*Nania (Mania) typica*. Lincoln; common.

*Mania maura*. Hartsholme; rare.

*Euclidia mi*. Common in woods and on roadsides.—*E. glyphica*. Skellingthorpe; rare.

Lea Road, Wolverhampton.

## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 212.)

### LEUCANIIDÆ.

*LEUCANIA CONIGERA*, *Fb.*—Very widely distributed and numerous, but in my experience rather local. At Howth and Sligo, as well as the paler type, a more richly coloured form occurs,—var. *suffusa*, Tutt.

*LEUCANIA LITHARGYRIA*, *Esp.*—Everywhere abundant. The varieties *pallida*, Tutt, and *ferrago*, Fab., occasionally occur. I have specimens of both from Lambay I., Co. Dublin.

*LEUCANIA EXTRANEA*, *Gn.*—There is a damaged specimen of this rare insect in the collection of the Hon. R. E. Dillon, which he assures me was taken at Clonbrock, Co. Galway, on sugar, between the 20th and 25th July, 1891.

[*Leucania obsoleta* was inserted in Mr. Birchall's list in error.]

*LEUCANIA LITTORALIS*, *Curt.*—Very locally distributed round the Irish coast. Magilligan, rather abundant, Co. Derry (*C.*); Castlerock, Co. Antrim, (*Bw.*); Dollymount, near Dublin; Arklow and Courtown Harbour, Co. Wicklow (*Bw.*); near Glandore, Co. Cork (*D.*); Waterville, Co. Kerry, ab. The Irish specimens I have seen are but lightly shaded about the white central streak.

*LEUCANIA IMPUDENS*, *Hb.*—“Abundant at Killarney” (*B.*). Mr. W. Salvage informs me that he has taken it freely at Mucross. One taken, in 1887, at Clonbrock, of a warm rufous tinge (*R. E. D.*).

*LEUCANIA COMMA*, *L.*—Widely distributed, but I have never found it in any abundance in Ireland. Mr. Watts found it fairly common at Belfast. Our specimens are decidedly of a pale type, with the black lines not strongly marked. They often



have a black dot at the end of the discoidal cellule (*nigropuncta*, Tutt). I have one dark example only (var. *suffusa*, Tutt), from Glandore, Co. Cork.

*LEUCANIA IMPURA*, *Hb.* — Very common throughout Ireland. Our specimens seem to correspond with the Scotch form, being pale in the fore wings and dark in the hind wings. I have seen none with more than three of the five black dots of Hübner's type developed; nor have I met with any of the reddish form, *punctina*, Haw.

*LEUCANIA PALLENS*, *L.* — Also a very common insect. It is very variable in the colour of the fore wings. The reddest example I have seen is from Killynon, Co. Westmeath (*Miss R.*), and is almost of a brick-red.

*CALAMIA LUTOSA*, *Hb.* — I have no information of the occurrence of this species in Ireland from correspondents, excepting Mrs. Battersby, of Cromlyn, Co. Westmeath, who has a specimen which she believes was taken by her. Probably it is widely spread in Ireland, as I have taken it (one specimen) at Howth, Co. Dublin; and several at Markree, Co. Sligo; and Enniscoe, on the shore of L. Conn, in Mayo. They belong to the vars. *pilicornis*, Haw., and *cannæ*, Steph., being for the most part of a pale wainscot colour, and a few of a reddish ochreous, but all possessing a transverse series of dots.

*CÆNOBIA RUFA*, *Haw.* — Mr. Birchall records Claring Bridge, Co. Galway, and Powerscourt, Co. Wicklow, as localities where it is common. Mr. Russ has found it near Sligo.

*TAPINOSTOLA FULVA*, *Hb.* — Very widely spread through Ireland, and common in most marshy localities. Brick-red forms, with and without longitudinal shadings, occur near Derry, where Mr. Campbell has found the larvæ feeding in the roots of bog-cotton. The very white form, var. *pallida*, St., also is frequently met with. On the Oxhill range, Co. Sligo, *fulva* is extremely abundant; also Belfast (*W.*); near Donegal; at Armagh (*J.*); Counties of Monaghan, Tyrone, and Westmeath; at Howth; near Naas, Co. Kildare; and Dursey I., Co. Kerry, are among the localities where I have taken it.

*NONAGRIA ARUNDINIS*, *Fb.* — Very widely distributed throughout Ireland. I have rarely failed in finding the larvæ wherever the food-plant flourishes in any profusion. Those which I have bred are chiefly of the dark blackish brown form, *fraterna*, Tr., from the marshes on the coast of Wicklow, and from Glandore, Co. Cork (pupæ taken by Mr. Donovan). Near Naas, Co. Kildare, very abundant; also Shannon Harbour, near Banagher, Co. Tipperary; Markree, Co. Sligo; Enniscoe, Co. Mayo; Favour Royal and Augher, Co. Tyrone; Armagh (*J.*); Belfast (*Bw.*); near

Cork (S.); and Limerick (N.). Rats are very destructive of the larvæ and pupæ, gnawing the stems of the food-plant wherever the insect is abundant.

APAMEIDÆ.

GORTYNA OCHRACEA, *Hb.*—Probably much more widely distributed than the few localities I append would indicate. I have never taken the imago. "Common and widely distributed" (B.). Knocknarea, Co. Sligo (*Russ*); Greystones, Co. Wicklow; Clonbrock, Co. Galway, one (*R. E. D.*).

HYDRÆCIA NICTITANS, *Bork.*—The variations presented by this insect have been most minutely classified by Mr. Tutt, and the distribution of the three chief forms discussed. The segregation of the type and the var. *paludis*, Tutt, seems to me often to be so remarkable as to suggest a doubt whether they might not be distinct. I have not, however, found v. *lucens* thus supplanting the type in any locality, but occurring with it in more or less abundance, as on the Wicklow sandhills, whence Mr. Tutt records having received specimens from me. My information at present does not, however, tend to support his idea that v. *paludis* is "a marsh or coast form." Though Mr. Russ takes it exclusively at Knocknarea, Co. Sligo, the type and v. *lucens* are to be found about eight miles further up the coast, on the sandhills at Lissadell. On the east coast at Sutton, Co. Dublin; and on the long parallel ranges of sandhills and fens which border the Wicklow coast for many miles, from Wicklow to Newcastle and Kilcool, and again at Arklow, I have found typical *nictitans* to be the almost exclusive form, with a sprinkling of v. *lucens*, and out of a series sent to Mr. Tutt he only noted one v. *paludis*. On the other hand, I last year took long series of nothing but v. *paludis* (except two v. *lucens*) at the two inland localities of Clonbrock, Co. Galway, and Mote Park, Co. Roscommon. At the former demesne the insects occurred in a field subject to occasional floods; at the latter, in ordinary grass pasture land. At Favour Royal, Co. Tyrone, I had a similar experience, and at Ardtully, Co. Kerry. The distribution of these forms I therefore believe requires further careful investigation, as it is possible that only striking specimens have been collected, and not a fair average sample. Localities:—The insect is very abundant and widely distributed, but I have not noted its distribution in respect to variation till within the last few years. Besides the Dublin and Wicklow sandhills, where the type is small, dark red, or brownish, with broad, white (rarely orange), reniform stigmata, it occurs freely at Cromlyn, Co. Westmeath, where are wide areas of flat bog; as also at Enniscor, Co. Mayo; Killarney; Altadiawan, Co. Tyrone, amid the moorland; Lissadell, &c. Var. *lucens* occurs at Arklow and the Wicklow sandhills; Lissadell and Markree



Castle, Co. Sligo; Mote Park, Roscommon (*grisea*); and at Dursey I., off Co. Kerry. Var. *paludis*, as already given.

*HYDRÆCIA MICACEA*, *Esp.*—Very abundant everywhere, varying much in colour and size. In Donegal, Mr. Hart took a series averaging 1 in. 2 lines in expanse, a size which I have met with occasionally elsewhere, as at Howth, where the ab. *brunnea* occurs, which probably Mr. Dunlop mistook for *H. petasitis*. Mr. Tutt's vars. *lutea* and *grisea* also are taken with the type in various localities.

*AXYLIA PUTRIS*, *L.*—Widely spread, but somewhat local, and occasionally numerous. Derry, ab. (*C.*); Armagh (*J.*); Favour Royal, Tyrone; Drumreask, Monaghan, scarce; Killynon (*Miss R.*) and Cromlyn (*Mrs. B.*), Co. Westmeath; Greystones, Co. Wicklow, ab.; abundant at Clonbrock (*R. E. D.*) and Kenryle, Co. Galway; Markree, and near Sligo (*Russ*), pretty abundant.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, Ph.D., F.L.S., &c.

(Continued from p. 217.)

*DANDACA*, *Walker*.

*Steiria* and *Minica*, *Walk.*

THIS genus consists of a few extremely variable species, identifiable most readily by the markings of the under surface of the wings; it is difficult to find two examples in which the pattern of the upper surface corresponds. The males have the antennæ finely and weakly ciliated, a slightly longer and more robust thorax than the females, and the frenulum and retinaculum slightly stronger.

*Dandaca cuculloidis*.

- ♂ *Stictoptera cuculloidis*, Guenée, Noct. 3, p. 52, n. 1383 (1852).
- ♀ *Steiria subobliqua*, Walker, Lep. Het. xiii. p. 1136, n. 1 (1857).
- ♂ *S. signifera*, Walker, *l. c.*, n. 2 (1857).
- ♀ *Minica confluens*, Walker, *l. c.*, p. 1140, n. 1 (1857).
- ♀ *Steiria humeralis*, Walker, Journ. Linn. Soc. vii. p. 174.
- ♀ *Briarda conturbata*, Walker, Proc. Nat. Hist. Soc. Glasgow, 1869, p. 354.
- ♂, ♀ *Steiria variabilis*, Moore, Descript. Ind. Lep. Atk. 2, p. 164 (1882).

Asia and Africa. In Coll. B. M.

To readily trace the modification of one variety of this species into another, it should be arranged thus:—*S. cuculoides*, *subobliqua*, *humeralis*, *conturbata*, *variabilis*, *confluens*, *signifera*. It is quite possible that *D. columba* may be another variety of the female; but as I have not hitherto seen links to connect it with the above series, I prefer, for the present, to regard it as possibly distinct. Mr. Hampson tells me that *Minica nigrilinea*, Walk., is a synonym of *S. subobliqua* (and therefore of *D. cuculoides*).

GRAMMODES, Guen.

*Grammodes geometrica*.

*Noctua geometrica*, Fabricius, Syst. Ent. p. 599, n. 37 (1775).

*Phalæna ammonia*, Cramer, Pap. Exot. 3, p. 98, pl. 250, D. (1782).

*Noctua bifasciata*, Petagna, Ins. p. 197 (1787).

*N. chalciptera*, Borkhausen, Eur. Schmett. 4, p. 771, n. 350.

*N. parallelaria*, Hübner, Eur. Schmett. Noct. pl. 66, fig. 324.

*N. linearis*, Hübner, Beitr. 2, pl. 4, T.

*Grammodes congenita*, Walker, Lep. Het. xiv. p. 1443, n. 7 (1857).

Europe, Asia, Africa, Australia. In B. M.

Considering how this unfortunate species has been burdened with names, it is remarkable how little it varies, the chief differences consisting in the width of the transverse white bands; if these differences were locally constant, they might have some value, but they are not. The Fabrician type evidently had the lower portion of the outer band suffused with brown, as in an Indian example in our series.

SYNEDA, Guen.

*Syneda grandirena*.

*Phytometra grandirena*, Haworth, Lep. Brit. p. 264.

*Aedia limbolaris*, Hübner, Exot. Schmett. Zutr. p. 23, n. 345, figs. 689, 690.

United States. In Coll. B. M.

Walker placed this species both under *Syneda* and *Grammodes*.

*Syneda graphica*.

*Drasteria graphica*, Hübner, Exot. Schmett. Zutr. figs. 11, 12.

*Euclidia capiticola*, Walker, Lep. Het. xiv. p. 1461, n. 7 (1857).

United States. In Coll. B. M.

Several of the Californian species appear to me to run so close that, when they come to be bred, I fully expect they will prove to be no more than varieties of one another.

(To be continued.)



## NOTES AND OBSERVATIONS.

THE OLDEST NAME FOR HOMOPYRALIS TACTUS, Grote.—Prof. John B. Smith, in his excellent 'Catalogue of North American Noctuidæ,' has shown that Mr. Grote's name of *H. tactus* was superseded by Walker's name of *Homoptera zonata* in 1865, and earlier still by his *H. contracta*, published in 1860. Walker, however, described the same species still earlier; for, in his Catalogue, vol. xiii. p. 1073, n. 44 (1857), he called the same species *Homoptera quadrisignata*. It was in the same drawer with Walker's *H. zonata*; but, in consequence of its having no locality, was overlooked by Prof. Smith. Another very closely-allied species from Santarem stood next to *H. quadrisignata*; it only differs in having the post-median line of the primaries denticulated above (as well as below) the upper radial vein; and, in my opinion, is very doubtfully distinct. Should this one character prove as unimportant as one might expect it to be, the name of *H. dotata*, Walk., will take priority over all the others.—A. G. BUTLER; Natural History Museum.

NOTE ON COCCYX OCHSENHEIMERIANA.—This species was first described as British by Mr. Barrett in 1878, from a specimen captured by Lord Walsingham among *Pinus cephalonica* at Merton, Norfolk (E. M. M. xv. 146). In 1885, Mr. Warren beat some specimens out of spruce fir at Brandon, Suffolk, about the middle of June, but these, with the exception of one fine female, were in bad condition. Mr. Boyd records one example from Waltham Cross, taken May 1st, 1893. I captured two specimens in 1893 at Pinner, Middlesex; one on May 22nd and one on June 3rd. This year I visited the same locality several times during May, but I only saw the species on one occasion, viz., May 18th, when three specimens were taken between 4 and 5 o'clock in the afternoon. Probably *C. ochsenheimeriana* may be found among spruce fir in many other localities in Britain than those mentioned above, but our present knowledge of the distribution of the species in these islands is very limited.—RICHARD SOUTH; Oxford Road, Macclesfield, July, 1894.

POLYPHAGOUS LARVÆ.—It may be useful and interesting to entomologists to know that I have this season found several species of insects in the larval stage to be very polyphagous. I had feeding at the same time, and in one large case, larvæ of *Saturnia carpini*, *Sphinx ligustri*, and *Attacus pernyi*, the Chinese oak-silkworm. The *S. carpini* larvæ were placed, on hatching, upon sprays of plum, upon which they fed until the second age; *S. ligustri*, similarly upon lilac; and *A. pernyi*, upon oak. Up to the second age they were separately confined within bags of book-muslin, upon their respective food-plants. They were then allowed the freedom of the case, each batch being placed upon its own food-plant apart from the others. I found, however, they all fed indiscriminately upon the several food-plants named above; and *S. carpini* from the third stage fed exclusively upon oak, by preference. *S. ligustri* also fed freely upon plum and oak; and *A. pernyi* seemed equally at home upon lilac.—T. J. W. FINCH; Swindon.

VANESSA C-ALBUM.—I am very pleased to be able to prove beyond doubt that the dark form is the type of the first brood (in this district, at any rate), for I have to-day taken five specimens near here, all freshly

emerged from the chrysalis, and not one of them were of the pale variety, which is typical of the first generation on the Continent. Two of the specimens captured were sitting upon their empty pupa-skins, so that it proves that the dark forms seen in the early summer are not all hybernated specimens.—W. HARCOURT BATH; Birmingham, July 14th, 1894.

“*SMERINTHUS TILIAE* TWO WINTERS IN PUPA.”—On May 2nd, two days after reading Mr. Claxton’s note on the above (*ante*, p. 177), I had a fine dark female *S. tilia*, which had been in pupa since 1892. I have noticed that in most of these cases of retarded emergence, the moth proves to be of the female sex. Several pupæ of *D. vinula* and *S. carpini*, which I have had for three years, produced perfect insects last month, and all proved to be females. One expects the two latter moths to be erratic as to their duration of time in pupa, but I fancy it is of rare occurrence for *S. tilia* to pass two winters in that state.—N. F. SEARANCEKE; Mitcheldean, Gloucester, June 17th, 1894.

*PLUSIA FESTUCE* DOUBLE-BROODED.—Is it generally known that this moth is double-brooded? The first brood appears here in June or July, and the second in August or September. Newman’s account evidently mixes up the two broods.—J. ARKLE; Chester.

*NYSSIA HISPIDARIA*.—Which is the type,—for authorities differ upon the point,—the light or the dark form? I find the latter to be the type in Delamere Forest. Some of my correspondents have never seen the dark form, although well acquainted with the light one, which, by the way, also occurs sparingly in Delamere Forest.—J. ARKLE; Chester.

A NEW FOOD FOR EXOTIC SILK-PRODUCING LARVÆ.—No doubt students and breeders of the exotic silk-producing Bombyces will be glad to hear of a new stock-food upon which, I believe, all the species may be reared. I have been successful in rearing the following species, from the egg, upon the common wild apple, usually known as “crab-apple”:—*Actias luna*, *Platysamia cecropia*, *Hyperchiria io* (American), *Saturnia pyri* (European), *Actias selene* (Indian). As is well known by all breeders, *A. luna* and *A. selene* are both walnut-feeders, and considerable trouble is often experienced in finding a suitable substitute where walnut cannot be obtained; with me the larvæ took to wild apple readily from the first.—T. J. W. FINCH; Swindon.

APHIDES AT TREACLE.—When visiting my “treacles” on Saturday last (July 7th), I found that they were simply smothered with Aphides, mostly of the green species; and that, not only on one, but on every tree I had treacled on the Saturday previous (June 30th). Coleoptera are of frequent occurrence, but I have never met with Aphides before; and I should like to know if any other entomologist has had a similar experience. My hunting-ground is that part of Epping Forest known as “Leyton Flats.”—RICHARD W. TAYLOR; 36, Shacklewell Lane, Hackney, N.E., July 11th, 1894.

MR. WELLMAN’S COLLECTION.—Collections of Lepidoptera that find their way to the hammer are too often made up of so-called rarities



and unique varieties gathered together regardless of cost, species now extinct and consequently eagerly sought after, and a mass of the commoner species in the most faded condition and utterly devoid of any data that might render them of interest. Mr. Wellman's collection, which was dispersed at Stevens' Auction Rooms on July 10th last, came under quite a different category; there were few rare or extinct species or remarkable varieties, but the rank and file of the collection were in unusually fresh and perfect order, and as a rule well localised, quite a history attaching to many of the series or individuals as the case might be; and the result of the sale—about two hundred pounds—appears to show that such conditions are appreciated by those who are willing to enrich their own collections on occasions of this kind. The contents of the three cabinets were divided into some 300 lots, of which the following were among the more interesting:—Lots 1 and 2, each containing five *Aporia cratagi*, with sundry *Papilio machaon*, *Leucophasia sinapis*, &c., brought 13/- and 12/- respectively. Lots 6 to 8, comprising seven each of *Melitæa aurinia* and *M. cinxia*, &c., went for 8/- to 10/- a lot; while an under-side variety of the latter species, figured in Newman's 'British Moths,' was knocked down for 32/6; and a specimen of *Vanessa antiopa*, taken on Clapham Common in 1873, was sold for 20/. Lots 18 to 20, which included the *Theclæ* and some well-marked forms of *Cænonympha typhon*, realised 11/- to 17/- each; an "hermaphrodite" *Lycæna icarus*, taken by Mr. Wellman on Wandsworth Common in 1860, sold for 55/-; and two specimens of *Polyommatus dispar*, both minus antennæ, but otherwise in fair condition, for 40/- and 45/- respectively. Lots 26 to 28, each containing six *Lycæna arion* and sundry other *Lycænidae*, ranged from 16/- to 20/- a lot; while *Deilephila galii* brought from 5/- to 7/-; *D. livornica* and *Chærocampa celerio*, from 10/- to 15/- apiece; and *Sesia sphegiformis*, 15/- to 17/- a pair. The other *Sesiidae*, in lots of about thirty specimens, realised 11/- to 17/- per lot; while one containing a yellow-banded form of *S. myopiformis* reached 26/-. Twelve *Zygana exulans*, arranged in three lots of four each, brought 13/-, 12/-, and 14/- per lot; and an [V] variety of *Setina irrorella*, together with five *Nola centonalis*, &c., 50/-. Lots 62 and 63, each containing some fourteen *N. centonalis* and twelve *N. albulalis*, &c., were knocked down at 40/- and 55/- respectively. Lot 64, sixteen *Lithosia muscerda* and other species of the same genus at 32/6. Lot 65, eleven *L. caniola* at 30/-. An example of *Callimorpha dominula*, with hind wings of a somewhat orange-red, *Nemeophila plantaginis* var. *hospita*, and two not very striking varieties of *Arctia caia*, were the means of raising lot 70 to 50/-. Lot 71, which included three specimens of *Spilosoma mendica* var. *rustica*, and five buff-coloured *S. menthastri*, brought 22/-; while lot 72, in which there were two of each, realised only 10/-. Ten specimens of *Lalia cænosa* sold at an average of over 15/- each; and a couple of *Cleora viduaria* for 55/-. Lot 97, in which were included variable series of *Tephrosia biundularia* and *Gnophos obscuraria* brought 32/6; and lot 100, containing the remainder of the series of *G. obscurata*, the three *Boletobia fuliginaria*, recorded by Mr. Wellman in the earlier numbers of the 'Entomologist,' &c., 30/-. Four *Acidalia circellata*, with other species of the genus, were sold for 16/-; while two other similar lots reached 20/- each. A specimen of *Acidalia herbariata*,

taken at rest on a shop window in Oxford Street in 1878, brought the lot in which it was included, together with *A. contiguaria*, &c., up to 37/6; while a similar lot, minus the *herbariata*, reached 16/- only. Nine fine specimens of *Acidalia strigilata*, together with *A. emutaria*, &c., were sold for 10/-; while the following lot, in which one of the *A. emutaria* was of a pinkish shade, and which included three *A. degeneraria*, one of them of a straw-colour, carried the bidding to 28/-; another lot, containing a fine series of thirteen of the last-named species, reached 16/-. An almost unicolorous brown variety of *Ematurga atomaria*, taken at a field meeting of the South London Society at Loughton, May 24th, 1884, sent lot 118 up to 21/-; four *Eupithecia ultimaria* having the same effect on lot 144; and a specimen of *Anticlea sinuata*, in which the white band was divided, carried lot 150 to 28/-. Fifteen bred *Cامتogramma fluviata* and one *Phibalapteryx polygrammata* were the evident cause of lot 154 running up to 42/-; as were five fine dark-banded forms of *Eucosmia certata* of the following lot touching 22/-; three *Drepana sicula*, received from Mr. Grigg, of Bristol, sold for 16/-; and a pair of *Dicranura bicuspis*, from Mr. Tester, for 30/-; six *Bryophila muralis* var. *impar* brought an average of 4/- each; and two *Leucania albipuncta*, taken in the warren at Folkestone by Mr. Oldham, reached 35/-; six *Agrotis pyrophila* and five *A. ashworthii* realised 16/-; eight *Plusia chryson*, five *P. bractæa*, &c., 21/-; four *Toxocampa craccæ*, &c., 10/-; and so on.—ROBERT ADKIN; Wellfield, Lewisham.

THE UNITED STATES ENTOMOLOGIST.—Prof. C. V. Riley having resigned the position of chief of the Department of Entomology in the United States of America, Prof. L. O. Howard has been appointed his successor.

## CAPTURES AND FIELD REPORTS.

SESIA MYOPIFORMIS AT KENSINGTON.—I have taken a specimen of *S. myopiiformis* in the garden here. There is a pear-tree just on the other side of my boundary-wall, and the specimen may have come from it.—J. H. LEECH; 29, Hyde Park Gate, S.W., July 10th, 1894.

SESIA CONOPIFORMIS, A SPECIES NEW TO BRITAIN.—Yesterday I met with a female specimen of *S. conopiiformis*, Esp. (= *nomadæformis*, Lasp.); it was beaten from buckthorn. This species differs from *S. allantiformis* in having three instead of two yellow rings round the abdomen, and is most like *S. tipulæformis*, but in that species the tuft is unicolorous. A very distinguishing mark is—femora violaceo-nigra. Staudinger gives *S. conopiiformis* as being found in Germany, Belgium, and France.—C. W. DALE; Glanvilles Wootton, July 20th, 1894.

PIERIS DAPLIDICE IN SURREY.—On Saturday, the 7th inst., I had the very good fortune to take a male specimen of the rare *Pieris daplidice* at Addington, near Croydon. It is a perfectly fresh specimen, and I think must have emerged from the chrysalis that very morning.—NORMAN H. JOY; Manor Road House, Beckenham, July 9th, 1894.



**PACHETRA LEUCOPHÆA IN KENT.**—Whilst on a visit to Wye, Kent, I had the good fortune to capture five specimens of *Pachetra leucophæa*, one on the wing on the evening of June 3rd, and four at sugar on June 7th; three of these latter were very much worn. One of them, a female, I kept alive, and she has since laid about fifty or sixty eggs. Had the evenings been warmer and more suitable for sugaring, I should doubtless have taken many more specimens, but though I sugared regularly for eight nights, June 7th was the only one on which anything put in an appearance. I also took a good series of that very local insect, *Scoria dealbata*. My best thanks are due to Mr. G. Parry, of Canterbury, whose note on *P. leucophæa* (Entom. xxvi. 295) induced me to spend most of my holidays at Wye, and who very kindly met me on June 3rd, and showed me the localities for both *P. leucophæa* and *S. dealbata*, at the former of which (The Kneading Trough) a nephew of his who accompanied us caught a fine specimen of *P. leucophæa* at rest on a blade of grass.—GEO. RICHARDSON; 19, Avondale Road, Peckham, S.E., June 21st, 1894.

**PLUSIA MONETA IN KENT AND SURREY.**—I picked up a specimen of *Plusia moneta* on the staircase this morning when descending from my bedroom; it must have flown in to light during or between thunder rains.—SIDNEY WEBB; Maidstone House, Dover, July 7th, 1894. On July 3rd I caught a specimen of *P. moneta* in the garden here.—D. P. TURNER; Tonbridge. On the night of July 23rd, 1891, I took with the net a specimen of *P. moneta* in my garden. 1892 and 1893 passed without my taking another. But on June 30th this year I took a very fine specimen in my garden, and another on the night of July 3rd.—(Rev.) W. B. MONEY; Vigo House, Weybridge. This recent addition to the British Plusiidæ seems to have established itself in West Surrey. It has been recorded in the 'Entomologist' as captured at Albury and Dorking, 1893, with a further record for 1894. It has been taken at Weybridge in 1893 (one specimen), and in 1894, one at least; these have not been recorded. On July 20th a male was taken at Merrow, near Guildford, on white campion (*Lychnis vespertina*) at early dusk. It was sluggish on the wing, and easily captured.—(Rev.) L. ROBERT FLOOD; Merrow Rectory, Guildford, July 21st, 1894.

**PÆDISCA RUBIGINOSA AND BUTALIS CICADELLA IN LANCASHIRE.**—The former species has occurred on the high moors among Scotch fir; the specimens are larger than those from Scotland. I took a very fine example of *B. cicadella* near Fleetwood on June 15th; this species had previously only been taken by Messrs. Dunning and S. Stevens. The latter gentleman caught five specimens at Southend about forty years ago; one of them he sent to me, and it has enabled me to identify my recent capture, which I might otherwise have had some trouble in naming.—J. B. HODGKINSON; Preston, June 27th, 1894.

**SPHINX PINASTRI IN EAST ANGLIA.**—It may interest some of your readers to know that three larvæ of *Sphinx pinastri* were taken by me last August and September in this neighbourhood. The larvæ were all found on the ground, just preparatory to going to earth, the time being shortly after midday in each case. The first was found Aug. 25th, a second on Aug. 27th, and a third on Sept. 6th. Two perfect specimens have emerged this year, one pupa not surviving the winter. The food-plant upon examination proved to be *Cedrus libani* and *C. deodara*, not *Pinus sylvestris*,

which, I think, is more usual, though several of these latter trees stood quite near. I may also note that many instances of this moth being taken in the neighbourhood of Aldborough and Saxmundham have been recorded of late years, but specimens were taken by my brothers here one so early as 1875, and two more in the years 1876 and 1879 respectively. Since the latter date *S. pinastri* has not been taken in this neighbourhood until last year, when the larvæ were discovered. — A. P. WALLER; Waldringfield, Woodbridge, Suffolk, June 27th, 1894.

PTEROSTOMA PALPINA AND LITHOSIA MESOMELLA AT DELAMERE FOREST. — On July 22nd, 1893, I took two nearly full-fed larvæ of *P. palpina* off poplar. They pupated a day or two after. A fine imago (male) emerged May 31st. The only other record I can find for the district is "Puddington, 1 specimen" ('*Macrolepidoptera of the Cheshire District*,' by Alfred O. Walker). On June 16th, 1894, I found a fine fresh specimen of *L. mesomella* at rest on a birch-leaf close to the ground. Excepting the capture at Tan-y-Bwlch on June 9th, 1893 (*Entom.* xxvi. 289), I am not aware that this species has ever been previously taken in this district. — J. ARKLE; 2, George Street, Chester.

LARVA OF CATEPHIA ALCHYMISTA. — On July 5th I went mothing with a friend in Abbot's Wood, near Eastbourne. We happened to shake an oak-bough on the chance of getting some larvæ, when down fell two larvæ, which to all appearances are those of *Catephia alchymista*. They were identified by Mr. Watkins, of Villa Sphinx, Eastbourne, who thought they were undoubtedly *C. alchymista*. They both spun up the next day, before I could carefully note the markings; but this is the description as far as I can remember: — In shape very much like *Catocala nupta*; colour reddish grey; ventral area bluish white, with a black spot on each segment, without legs or claspers; very conspicuous yellow collar; two small pyramidal humps on the fifth segment, and two slightly larger on the twelfth, covered with black hairs. Down each side was a row of small yellow warts, one on each segment, emitting one or two black hairs. The whole dorsal area speckled with minute black dots. *Calligenia miniata* was common in the wood, and *Argynnis aglaia* swarmed on Beachy Head. — H. W. SHEPHEARD-WELWYN; Glenryde, Bidborough, near Tunbridge Wells, July 17th.

[The 5th of July seems to be exceptionally early for *C. alchymista* to pupate. On the Continent the larva is found from July to September. Our correspondent's description of the larva agrees in a striking manner with that given by Newman in '*British Moths*,' p. 463. — ED.]

## SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. — May 24th, 1894. E. Step, Esq., President, in the chair. It was announced that Mr. T. W. Hall, F.E.S., had been elected a Vice-President in place of Mr. J. Jenner Weir. Mr. C. A. Briggs exhibited a variety of *Lycena argiolus*, L., having several spots on the under side lengthened into streaks and some united; also a variety of *Vanessa io*, L., with the eye-spot only partially developed. Mr. Hall, a specimen of *Dicranura bicuspis*, Bork., with its cocoon, and remarked how closely



the cocoon harmonised with the bark. Mr. Fremlin, a large number of bred aberrations of *Vanessa urticæ*, L., one series being of premature varieties; another showing variation in number and size of the characteristic spots in the centre of the fore wing, and ranging from only one spot present to four blotches; and a third series showed more or less suffusion of the orange coloration; one specimen was almost black. Mr. Dennis, a number of similar vars. of the same species, together with a specimen having a perfect and several with an imperfect band on the upper wing. Mr. Filer, a series of *Nyssia hispidaria*, Fb., taken in Epping Forest this year. Mr. R. Adkin, a long and variable series of *Boarmia cinctaria*, Schiff., bred from Co. Cork ova, one extreme form having only a broad marginal dark band, a central light band, and a basal dark patch; also living larvæ of the same species. Mr. Henderson, a specimen of *Macroglossa bombyliiformis*, Och., taken at Brockenhurst during Whitsuntide. Mr. Billups, the following new and rare Diptera:—*Chortophila setaria*, Mg., from Dulwich; *Blepharoptera inscripta*, Mg., from Oxshott and Bromley; *Heteromyza atricornis*, Mg., from Oxshott; *Hypostena medorina*, Schnr., from Oxshott; *Sepsis punctum*, F., and *Callomyia amœna*, Mg., both from Bromley. Also, on behalf of Mr. Manger, a small collection of Australian Coleoptera and Homoptera. Mr. Hamm, a series of aberrant *Chrysophanus phleas*, L., one example being intermediate between the type and var. *schmidtii*, Gerh.; a series of *Hybernia leucophœaria*, Schiff., showing extreme range of variation; a series of bred *Agrotis saucia*, Hb., all very light, and agreeing with the female parent; a striking var. of *Apamea unanimitis*, Tr., having a light grey cloud extending from the apex of the fore wings along the hind and inner margins to the base; also a specimen of *Lithosia griseola*, Hb., of a brown instead of a leaden hue. Mr. Williams, a long bred series of *Pieris napi*, L., showing extreme variation, and read a short paper thereon. Mr. Sauze, insects taken at Seal Chart during the Society's Field Meeting on May 19th. Mr. Turner, two specimens of the rare homopteron, *Centrotus cornutus*, taken by Mr. Lewcock at the same place. Mr. Step read a paper entitled "Land Crabs."

June 14th.—The President in the chair. Mr. R. Adkin exhibited, on behalf of Mr. Tugwell, a series of varieties of *Spilosoma lubricipeda*, Esp., the product of a cross between var. *radiata* and var. *fasciata*, and read notes; three specimens of hibernated *Vanessa antiopa*, L., with pale margins, from Montreal, Canada; a series of *Asteroscopus nubeculosa*, Esp., bred from Rannoch ova, some of which had been in pupa three years; also bred specimens of *Aleucis pictaria*, Curt., from the New Forest. Mr. Frohawk, on behalf of Mr. Fremlin, a var. of *Apatura iris*, L., from Berlin, intermediate between the type and var. *iole*, Schiff.; on behalf of Mr. South, a dwarf captured specimen of *Euchloë cardamines*, L., measuring only  $1\frac{1}{4}$  in. in expanse, and another specimen with the apical patch of two shades of yellow; also an ovum, *in situ* on a nettle-leaf, of *Vanessa c-album*, L., together with larvæ of the same species, showing all five stages of growth. Mr. Manger, a large collection of insects of all orders, captured on the steamship 'Kara' by Capt. T. Walker during a voyage to New York and Shanghai and back. It was interesting to note a specimen of *Acherontia atropos*, L., from Shanghai. Some species shown were new. A discussion

ensued as to the distribution of species and the distances from land at which insects have been noticed. Mr. Edwards, specimens of *Papilio priamus* and *P. hewitsonii*. Mr. West (Greenwich), specimens of *Cryptocephalus nitidulus*, Gyll., and *C. coryli*, L., from Box Hill; also two very rosy males of *Smerinthus populi*, L., which had been attracted by a bred female. Mr. Filer, a long bred series of *Smerinthus populi*, L., among which was a male of the female coloration; one specimen had emerged in August of last year, and in this example the discoidal spot on the primaries was much smaller than in the rest of the brood, which went their usual period. Mr. Turner, a series of *Cymatophora ridens*, Fb., from the New Forest, a larva of the same species, and a pupa of *Melitæa aurinia*, Rott. The Report of the Field Meeting at Reigate was then read.

June 28th. — The President in the chair. Mr. G. A. Scorer was elected a member. Mr. C. Fenn exhibited a bred series of *Geometra papilionaria*, L., from one brood, of which some larvæ were not yet fully fed; a specimen of *Heliothis peltigera*, Schiff., having the blotch in the dark border of the hind wing very large; a very long series of *Selenia lunaria*, Schiff., showing spring, summer, and intermediate forms from one batch of ova; and a *Mantis* from Australia. Mr. R. Adkin, specimens taken during the Society's Field Meeting at Reigate, including the specimen of *Pachetra leucophæa*, View., previously reported, and vars. of *Lycæna icarus*, Rott., and *L. bellargus*, Rott. Mr. Dennis, ova and young larvæ of *Bombyx rubi*, L., from Reigate. Mr. Manger, a specimen of "British Coral," *Leprealis foliacea*, El. & Sol., taken from a portion of the French Atlantic Cable about sixty miles from Brest. Mr. Turner, a long series of *Lycæna bellargus*, Rott., from Box Hill, showing all the ordinary variations, some of the females having a considerable amount of the male coloration. A discussion took place as to the scarcity and lateness of insects this year, especially with regard to the Geometræ.

July 12th. — The President in the chair. Mr. R. Adkin exhibited a bred series of *Dianthæcia nana*, Rott., from Unst, all very dark and some unicolorous; and a yellow-banded var. of *Sesia myopiformis*, Bork., from Mr. Wellman's collection. Mr. Oldham, series of *Rumia cratægata*, D. L., including one with a very well developed waved line on all four wings; of *Noctua triangulum*, Hufn., and of *Dasychira pudibunda*, L., — all bred this year, from Epping Forest; also insects taken at Wisley on July 7th. Mr. Dennis, varieties of *Epinephele ianira*, L., including a fine xanthic specimen. Mr. Auld, a long bred series of *Phorodesma smaragdaria*, Fb., from Essex, one specimen having only the discoidal spots present. Mr. C. A. Briggs, a specimen of the rare lacewing fly, *Nothochrysa capitata*, Fb., taken at Wisley. Mr. Edwards, two specimens of *Ornithoptera cræsus* from Batchian, *Papilio gyas* from India, and *P. electra*. Mr. Perks, the egg of a *Coccinella* deposited on the point of a thorn. Mr. Turner, series of *Lycæna minima*, Fues., from Galway, showing gradual diminution of spots on the under side; a brown-suffused var. of *L. astrarche*, Bgstr., from Reigate; and an asymmetrical var. of *Smerinthus tilia*, L. Mr. Turner read the Report of the Field Meeting on July 7th at Wisley, and Mr. Carrington made some remarks upon the scarcity of Lepidoptera in that district, and noted the abundance of Neuroptera. — HY. J. TURNER, *Hon. Report Sec.*



NORTH LONDON NATURAL HISTORY SOCIETY.—The annual excursion to the New Forest took place on Friday, May 11th, 1894. The party journeyed down, as usual, by the 5.50 p.m. train from Waterloo, and arrived at Lyndhurst about half-past nine. The gentlemen were quartered at No. 2, Lynwood, where the accommodation was in every way satisfactory; the ladies, under the charge of Mrs. Robbins, were at the Swiss Cottage. The weather during the journey was dull and often rainy. Saturday morning broke with a lowering and murky sky, and a north-east wind, but undeterred by these unpleasant weather prognostications, Messrs. Battley, Tremayne, and Nicholson put on mackintoshes and sallied forth to work the fences before breakfast. It immediately began to rain, but this had no effect on the lepidopterists, who, having finished their round, and only taken two *Melanippe fluctuata* and one *Eupithecia vulgata*, started larva-beating up Beechen Lane. The rain ceased for a time, and then came down harder than before. Off the very first oak Mr. Battley beat a young larva of *Agriopsis aprilina*, and Mr. Tremayne subsequently beat another. Other larvæ beaten were *Oporabia dilutata*, *Hemithea strigata*, *Miselia oxyacanthæ* (some very nice lichen forms), *Himera pennaria*, *Hybernia defoliaria*, *H. aurantiaria*, *Phigalia pedaria*, *Nyssia hispidaria*, and *Calymnia trapezina*. *Asphalia ridens* was conspicuous by its absence; *Eupithecia abbreviata* was also not seen in the larval state, and all the larvæ were in a very backward condition. After breakfast, when the sun was shining brightly, the whole party started up Beechen Lane for Denny Wood. *Argynnis euphrosyne* was the first insect taken on the wing, and these were subsequently discovered to be out in fair numbers. So also was *Euchloë cardamines*, whilst hibernated *Gonopteryx rhamni* might be called plentiful. One or two eggs of the latter were found, but the buckthorn was not well advanced. The trees generally were fairly forward, except the oaks, amongst which there was a very vast difference, some of them being almost fully out, whilst others, perhaps close by, were only just shooting. The bracken was very low. More larva-beating took place, and the birch in particular was thrashed for larvæ of *Brephos parthenias* and *Asphalia flavicornis*; but although one or two small examples of the former were taken, the latter was not seen. As the members proceeded towards Denny, solitary specimens of *Lycæna argiolus* turned up in some numbers. Their condition was very variable, except the females, all of which appeared to be fresh. The same remark applied to *Pararge egeria*, which was also about. Scarcely any *Geometræ* appeared to be out. *Genista anglica*, on the well-known "Bombyx heath," was searched for larvæ of *Pseudoterpna pruinata*, but although two specimens turned up on the very first plant searched, no others were found. Messrs. Smith, Robbins, Battley, Harvey, and Woodward pushed on across Denny Bog to Stubby Copse, and succeeded in taking several specimens of *Macroglossa bombylifformis* by working along the railway line, where the insect was found last year. They also obtained *Syrichthus malva*, *Nisoniades tages*, and *Euclidia glyphica* in lovely condition, the colouring of the specimens being unusually fine. On Sunday morning Messrs. Smith, Tremayne, Robbins, Battley, Harvey, and Woodward worked through Holland's Wood to a spot where *Melitæa aurinia* is said to occur. This species was not seen, however, and was probably not out. A few

specimens of *Nemeobius lucina* were taken, and one specimen of *Thecla rubi* by Mr. Battley. Dusking was tried in Beechen Lane and White-heath in the evening, but though several Geometers were about, the result was still unsatisfactory. Two specimens of *Ligdia adustata* were taken by Mr. Woodward, and *Pachynemias hippocastanaria* was taken by several of the members. Subsequently the majority of the members, with the exception of Messrs. Tremayne, Battley, and Woodward, worked across the heath on to the Matley Road, the result being about forty specimens of *Scodiona belgaria*. On Monday morning several of the members were out before breakfast. Mr. Battley obtained *Lobophora hexapterata* from the fences, and then unsuccessfully worked the heath on the Matley Road for *Scodiona belgaria*, which he had failed to obtain the previous night. Subsequently, as he was returning *viâ* Beechen Lane, he beat a half-grown larva of *Apatura iris* off the very same fallow-bough from which he had obtained one two years before. Mr. Woodward succeeded in beating a couple of larvæ of *Thecla quercus*. After breakfast the whole party started for Rhinefield *viâ* Gritnam Wood. The usual Lepidoptera were about. Several specimens of *Lycæna argiolus* were taken, including females in good condition. And *P. egeria*, *G. rhamni*, *A. euprosyne* in the wood, and *Ematurga atomaria* on the heath, occurred in its usual numbers. The rhododendron avenue was reached about midday, but the flowers, with only a few exceptions, were not yet out. Only one or two specimens of *Macroglossa fuciformis* were seen, but these appeared to be in perfect condition; the species was supposed to be just emerging. The party returned home *viâ* Hurst Wood, and left Lyndhurst about 7 o'clock that same evening, reaching Waterloo soon after 10 p.m. As regards Entomology, the backwardness of the season rendered the holiday less successful than in former years. Had Whitsuntide fallen later, collecting would doubtless have been much more profitable. As it was, except among the early butterflies, and one or two particular species, like *M. bombyliiformis*, there was little work to be done by day; whilst, with the exception of *Scodiona belgaria*, the absence of Geometræ rendered dusking an almost total failure. Sugar was not tried. But perhaps the party did more work in other branches of Natural History than has been done on previous occasions, and in any case the unanimous verdict of the members who attended the excursion was that the holiday thoroughly sustained its reputation of being one of the most enjoyable events in the "North London" year. — LAWRENCE J. TREMAYNE, *Hon. Secretary*.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*June* 18th, 1894. Mr. R. C. Bradley in the chair. Mr. C. F. Haines, of Stourbridge, and Mr. R. W. FitzGerald, of Uley, Dursley, Glos., were elected members of the Society. The insects captured on the Cotswolds during the recent visit of the Society were shown as follows:—Mr. R. C. Bradley, Lepidoptera and Diptera, &c.; the Lepidoptera included a specimen of *Thecla rubi*, with no trace of the white markings on the under side. There were many Diptera, including *Syrphus triangulifer*, an addition to our list, *Cheilosia chrysocoma*, *Brachyopa bicolor*, and other nice ones not as yet satisfactorily identified. Mr. C. J. Wainwright, Diptera only; these included *Syrphus annulipes*, Zett., new to our list, *Gymno-*



*chæta viridis*, and other Tachnidæ, and one or two doubtful insects, upon which he read a few notes. Mr. A. H. Martineau, Hymenoptera, including *Osmia xanthomelana*, *Andrena bucephala*, *Nomada ochrostoma*, a remarkably dark form of *Bombus muscorum*, &c. Other insects, Lepidoptera, &c., were shown by Messrs. A. W. Walker and W. Bowater. Mr. B. C. Rossiter exhibited a few Lepidoptera recently taken at Wyre Forest, *Cherocampa porcellus*, *Notodonta dictæa*, &c. Mr. C. J. Wainwright, a small box containing a few rare Diptera, including the three closely allied species of *Syrphus annulatus*, *S. vittiger*, and *S. lineola*, Zett.; the last species, the naming of which has been confirmed by Mr. G. H. Verrall, is a further addition to our British list of Syrphi. The box also contained one specimen of *Platychirus spathulatus*, Rnd., from Conway, a species just added to our list, on the strength of two specimens from Devonshire, by Mr. Verrall.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

MIDLAND RAILWAY NATURAL HISTORY SOCIETY.—June 4th, 1894. The second monthly meeting was held at the Midland Institute; Mr. T. Hey, President, in the chair. After the ordinary business of the meeting, Mr. F. W. G. Payne exhibited *Euchloë cardamines*, *Pieris napi*, *Spilosoma lubricipeda*, *Cilix spinula*, *Emmelesia albulata*, *Rumia cratægata*, *Abraxas ulmata*, captured near Derby. Mr. Hey, *Bombyx rubi*, bred from Bournemouth larvæ, *Cænonympha pamphilus*, *Polyommatus phlæas*, *Heliodes arbuti*, taken near Ashchurch.

July 2nd.—The President in the chair. Captures were exhibited by Messrs. J. Hill, T. Hey, and F. Payne. Mr. Hill gave a practical demonstration of larva preserving and mounting, which was followed with great interest. The first field day was announced for Saturday, July 7th, to Whatstandwell.—F. W. G. PAYNE, *Hon. Assist. Sec.*

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## RECENT LITERATURE.

*Abstract of Proceedings of the South London Entomological and Natural History Society for the years 1892 and 1893, together with the Presidents' Addresses.* 8vo, pp. 160. Hibernia Chambers, London Bridge. 1894.

WHATEVER objection may be taken to the delay in publication, this Society is to be heartily congratulated on the production of a most interesting volume. In the Address for 1892 (C. G. Barrett) the subject of protective mimicry in Lepidoptera is treated in a lucid and instructive manner; whilst that for 1893 (J. J. Weir) deals almost entirely with Entomology and its pursuit, and includes valuable remarks on some important works published during the year. Only matters of more than passing interest have been abstracted from the Proceedings, and of the papers published the following are useful contributions to the subjects with which they deal:—"Remarks on *Pieris napi* and allied forms," "Notes on the wet and dry seasons' forms of certain species of Rhopalocera," and "Isochromatous Lepidoptera," by J. J. Weir; "Notes on the Cocoons of *Eriogaster lanestris*," and "My Summer Holiday," by R. Adkin; "Notes on the unusual abundance of *Polyommatus phlæas* in 1893," by F. W. Hawes.

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## EDITORIAL.

WE are sure that our readers will be pleased to learn that Mr. W. F. Kirby, F.L.S., F.E.S., Assistant in Zool. Dept., British Museum (Nat. Hist.), S. Kensington, has consented to act on the Reference Committee of this Journal.

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### ABNORMAL EXAMPLE OF *ZYGÆNA TRIFOLII*.



THE extraordinary specimen of *Z. trifolii* figured above has been kindly lent by Mr. W. M. Christy, who took it on June 18th last in West Sussex.

On the right side the hind wing is entirely absent, whilst on the left side a wing similar in shape, colour and markings to the normal fore wing occupies the position of the ordinary hind wing. The right fore wing is not so well developed as that on the left.

In his letter accompanying this remarkable insect, Mr. Christy mentions that *Z. trifolii* did not occur this year in his district in anything like last year's numbers, and that eight or ten examples of an orange-red form were captured, but only four specimens of the yellow form were observed.

RICHARD SOUTH.



THE COPROPHAGOUS LAMELLICORNS; A REVISED LIST  
OF SPECIES BELONGING TO THE GENERA *PACHY-*  
*LOMERUS*, KIRBY, AND *ATEUCHUS*, WEBER.

By JOHN W. SHIPP.

Assistant in the Hope Dept., Oxford University Museum.

THE name *Scarabæus* was adopted by the ancients to denote the sacred beetle of the Egyptians, and is derived from the African word *Kephra*, meaning circle or cypher, and probably has reference to the round pellets of dung and mud which the beetles use for depositing their eggs. *Kephr* is probably the root-word, and is, according to Clarkson, analogous to the Greek word *Kapobos*, the Latin word *Scarabæus*, and the English word *crab*. The beetle was regarded by the ancient Egyptians to represent the sun, and as such was worshipped by them, and introduced into their hieroglyphical writings. Amulets—models of the beetle—carved both in wood and in a kind of soft stone, have been found in large numbers in the sarcophagi; most of those which have come under my notice were embalmed with the mummified body, and were covered on the flat side with hieroglyphics.

A specimen of *Ateuchus ægyptiorum*, Latr., was found in a sarcophagus which was opened a few years ago, but the metallic colour has slightly faded. It is thought by some entomologists that *A. sacer*, Linn., is the beetle which was worshipped by the Egyptians.

As the word *Scarabæus* was applied by Linnæus to represent the whole tribe of Lamellicorns, the name *Ateuchus*, Weber, should rightly be adopted for the genus instead of *Scarabæus*. In the *Annals Soc. Ent. Belgique*, xvii. Lansberge classifies the *Scarabæidæ* (*Ateuchites*) as follows:—

Scarabæidæ	{	Ateuchides vrais	{ Ateuchides, s. s. Eucranides
		Canthonides	{ Canthonides vrais Mentophilides
	{	Sisyphtides	Epilissides
			Epirhinides

If the name *Scarabæus* is to be dropped in favour of *Ateuchus*, the primary division ought properly to be *Ateuchidæ*.

Burmeister (*Stettiner Ent. Zeit.* xxxiv. pp. 403—407), in a paper entitled "*Lamellicornia Argentea*," commences a revision of the *Coprides* of the *La Plata*, and divides the *Scarabæidæ* (*Ateuchidæ*) into four families:—1, *Ateuchidæ*; 2, *Copridæ*;

3, Onitidæ; 4, Onthophagidæ. The first of these he divides into—1, Eucraniidæ; 2, Coprobiidæ. I would, however, divide the Ateuchites with Burmeister, and the most natural divisions are to be found in the following table:—

Ateuchites	i. Ateuchidæ	i. Ateuchinæ	{ Ateuchini
			{ Eucraniini
	ii. Copriadæ iii. Onitidæ iv. Onthophagidæ	ii. Canthoninæ	{ Canthonini
		iii. Sisypchinæ	{ Mentophilini
			{ Epilissini
			{ Epirhinini

The first section (Ateuchini) contains the genera *Pachylomera*, *Ateuchus*, *Circellium*, *Sceliages*, and *Gymnopleurus*, which are furnished with wings, and have the sutures distinct.

- I. Body winged, intermediate coxæ more or less separated, sutures always distinct, body more or less rounded, generally depressed above,\* alike in both sexes. Antennæ 9-jointed.
  - A. Anterior legs destitute of tarsi; outer edge of the elytra smooth, not sinuate.
    - a. The apex of the four posterior tibiæ produced into a single spur.
      - aa. Anterior femora strongly swollen, toothed on the outer edges, and furnished with a strong spur or tooth on the under side in the males. . . . . *PACHYLOMERUS*, Kirby.
      - bb. Anterior femora normal, without a spur on the under sides, in the males *ATEUCHUS*, Weber (*SCARABÆUS*). (Authors).
    - b. Apex of the intermediate tibiæ truncate, furnished with two small spurs; intermediate coxæ more separated; apex of posterior tibiæ truncate, and furnished with one spur.
      - aa. Metasternum smooth and flat, body subhemispherical, edge of clypeus with three indentations forming two small round teeth in centre; the four posterior legs are furnished on their edges with a number of small spines; anterior tibiæ shortish, furnished with three teeth on the outside edge . . . . . *CIRCELLIUM*, Latr.

\* Except in *Circellium*.



- bb. *Metasternum cuneiform* (wedge-like); body much resembling *Ateuchus*; edge of clypeus furnished with six teeth, the two centre ones being produced, and having a semicircular indentation between them; anterior tibiæ longer, slender, curved inwards towards the apex, and furnished with four teeth on the outside edge . . . . . *SCELIAGES*, Westw.
- B. Anterior legs furnished with tarsi; metasternum cuneiform; outer edge of elytra sinuated laterally near the base . . . *GYMNOPLÉURUS*, Illig.

## LAMELLICORNIA.

Tribe. ATEUCHITES.

Family. ATEUCHIDÆ.

Subfamily. ATEUCHINÆ.

Section i. ATEUCHINI.

- Genus 1. *PACHYLOMERUS*, Kirby, Zool. Journ. iii. p. 520 (1828).  
*femoralis*, Kirby, Zool. Journ. iii. p. 520, pl. xiv. f. 1 (1828);  
 Bertolon, Nouv. Comment. Ac. Bonsu. x. p. 390 (1849).  
*horridus*, Boheman, Ins. Caffr. ii. 2, p. 179 (1848).  
*opacus*, Lansberge, Col. Hefte xii. p. 4.

Ethiopian Region. 1, 3. Caffraria; Trop. Africa; Cape Colony; Limpopo; Zambezi; Lake N'Gami; Matabili-land.

*Pachylomerus* was given by Kirby to a large species of *Ateuchus* with the anterior femora much swollen and dilated. Indeed, such gigantic femora seem quite out of place on the insect.

The male differs from the female in being furnished with a short stout spur on the under side of the anterior femora in the centre towards the outer margin. The females appear to have the under side of the anterior femora plain. The clypeus is divided into three lobes, the centre one of which is 4-toothed.

*P. opacus*, Lansberge, does not appear to differ from *femoralis*, Kirby, in any definite particulars.

The habits of *Pachylomerus* are similar to those of *Ateuchus*.

Genus 2. *ATEUCHUS*, Weber, Obs. Ent. p. 10 (1807).

*Scarabæus*, Linn., Syst. Nat. 12, ed. i. 2, p. 545 (1767).

*Actinophorus*, Creutzer, Ent. Vers. p. 79.

*Heliocantharus*, McLeay, Horæ Ent. ii. p. 497.

*Sebasteos*, Westwood, Trans. Ent. Soc. iv. p. 225.

*Scarabæus*, Panzer, McLeay, Mulsant, Harold, &c.

This is the *Scarabæus* of Linnæus and other authors. The species are peculiar to the Old World, and by far the greater proportion of the described species are found in the Ethiopian

Region, in the divisions 1, 2, 3, of Wallace. No species seem to occur in the 4th subregion, *viz.*, that of Madagascar, although it is not improbable that one or two of the numerous species which occur on the mainland may be also found on the island.

*Æruginosus*, *cupreus*, and *savignyi* are found in subregions 1, 3; *lamarki* in 1, 2; *morbillosus* in 2, 3; *isidis* occurs in the 1st subregion, and also in the Palæarctic subregion 2. The majority of species, however, are found in subregions 1 and 3.

The Palæarctic Region produced ten species, most of them being found in subregion 2, a few only being found in the 1st subregion; while in the 3rd subregion only *acuticollis*, Mots., and *sacer* var. *typhon*, Fisch., are found.

The Oriental Region produces *brahminus* and *gangeticus* from the 2nd subregion; *devotus*, *erichsoni*, and *sanctus* from the 1st. An undescribed species in the Hope Collection comes from Assam, in the 3rd subregion.

*Ateuchus* consists of species having the body rounded, generally depressed above alike in both sexes, antennæ 9-jointed, with a leaf-like club. The four posterior tibiæ are slender, elongate, not abnormally truncated or dilated at tips, obliquely truncated, and furnished with a single spur at the apex. The outer margin of the elytra is smooth. The clypeus is divided into three lobes, the outer edge being furnished with six teeth.

(To be continued.)

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## LIFE-HISTORY OF VANESSA C-ALBUM.

By F. W. FROHAWK, F.E.S.

My success in working out and completing the life-history of this interesting butterfly this season is entirely due to the great kindness of Mrs. Hutchinson, of Leominster, who was good enough to send me a fine living female (the only specimen she knew of taken during the past spring), which I received on April 14th last.

On the following day, April 15th, I placed the butterfly upon a growing plant of stinging nettle (*Urtica dioica*), but both that day and the following were too dull to induce her to deposit. The morning of the 17th being brighter, I supplied her with sugar and water, which she imbibed apparently with great relish for ten or fifteen minutes, and enclosing her upon the plant, I placed it in the full sunshine. Upon examining the plant shortly afterwards, I was pleased to find a few eggs had been deposited, and by the afternoon I found twenty-three eggs were laid, the majority of them being upon the upper surface of the leaves, and as many as seven on one leaf, the others distributed over the



plant, and a few upon the gauze covering. From that day until the morning of the 21st no eggs were laid, the weather remaining very dull, without a single gleam of sunshine; during those three days she remained perfectly still sitting head downwards, in which attitude I invariably found her while resting; on April 21st she again deposited. The following table of dates and number of eggs deposited may be of interest:—

		Number of eggs laid.	
April	17th .....	23	
"	21st .....	few	
"	23rd .....	few	
May	1st .....	65	{ several
"	2nd .....		{ several
"	5th .....	40	
"	10th .....	10	
"	11th .....	10	
"	13th .....	20	
"	14th .....	25	
"	17th .....	17	
"	18th .....	75	{ few
"	18th to 24th .....		{ none during cold
"	24th .....		{ 25
"	25th .....		{ 16
June	1st .....		{ 10
		Total 275	

The female died on June 3rd, having lived in my possession for fifty days, during which time I fed her at frequent intervals, about every other day, according to the weather. From the above table it will be seen that forty was the greatest number of eggs deposited in a single day. Comparatively few were laid during the afternoon, the morning sun being the most suitable.

In the interesting letter from Mrs. Hutchinson received with the specimen, alluding to *V. c-album* she remarked, "They will sometimes lay as many as seventy or eighty eggs"; therefore, from the large number this particular female deposited, undoubtedly it was the full complement of eggs. The ova are laid singly, and principally on the upper surface of the leaf, and generally many upon one leaf.

The ovum measures in height  $\frac{1}{8}$  in., is of an elongate spheroid form, smallest at the crown; there are either ten or eleven glassy white longitudinal keels which run from the crown to the base; they all commence at the edge of the operculum, leaving the central portion of the summit bare; they are highest at the commencement, decreasing in height as they descend and forming merely fine ribs after traversing the upper half, and finally disappearing on reaching the base; they have the appearance of fluted glass and are of a glistening

whiteness; the spaces between the keels are slightly concaved, and very slightly ribbed transversely, only showing on that portion of the egg which is in high light. The colour is a clear green with whitish granulations, giving the appearance of a fine cellular pattern and appearing somewhat under the surface, and only visible on the shaded portion of the shell; the base is rounded and apparently smooth; the operculum is granular and slightly convex.

I examined a large number of eggs, and found the keels to be either ten or eleven in number, but eleven to be most frequent. The colour begins to change about four days before hatching, gradually turning more opaque and somewhat yellower, and showing a darkish blotch about the middle which slowly grows more distinct, and then the dark head of the larva appears visible under the surface of the crown; the egg then deepens into a dark grey-green, and finally the crown becomes black. The young larva makes its exit by eating away the operculum until the aperture is sufficiently large to allow its head to protrude, when it crawls very slowly out of the shell and at once creeps to the under surface of the leaf, and thereon spins a slight web and commences feeding.

On May 4th, larvæ began to hatch out from the eggs first deposited, having been about seventeen days in the egg. Directly after emergence the little larva measures  $\frac{1}{12}$  in. in length. The body, legs, and claspers are of a pale ochreous tinged with green, especially on the anterior segments; the 4th, 6th, 8th, 10th and 11th segments are rather darker than the rest of the body, these five segments being of a rusty-brown hue, giving the larva a somewhat banded appearance; each segment consists of large swollen prominences, those on the dorsal surface being very large and elevated, those of the lateral region are more compressed; the dorsal pair on each segment are the largest, and from the apex of each rises a long gently curving hair tapering off into a very fine point; the sub-dorsal pair are conical in form and are united at their bases, and one placed slightly above the other, the lowest one being directly above the spiracle; both these terminate by a long hair, the upper one curving forwards and the lower one curving backwards; immediately below the spiracle is a double globular wart, the anterior portion bearing two hairs, one curving slightly forwards and downwards, the other directed backwards and downwards, the posterior half bears one hair which curves upwards and backwards. All the hairs are simple, finely pointed, and have bulbous bases excepting the dorsal ones; all are black with light tips. The claspers are very ample, and have two delicate whitish finely pointed spines, both directed downwards; the foot is black. The greater part of the surface of the larva has a granular effect, especially on the under surface, where it is clothed with ex-



tremely minute blackish points; the head is shining black and beset with hairs; the spiracles are black. When nine days old, and before the first moult, it measures  $\frac{1}{8}$  in. long. The ground colour is clear brown inclining to ochreous (palest on the under surface), and chequered with dark-brown and white, and studded with black warts, each emitting a long hair as described above, but now all the hairs are stiffened and appear as fine bristles; the dorsal half of the 2nd, 3rd, 5th, 7th and 9th segments are white, also the greater part of the anal segment; the remaining segments are brown dorsally (appearing dark-brown from the presence of the black warts on the sienna-brown ground colour), which form a strong contrast with the white; the entire surface is particularly glossy, and the white resembling marble. The head, legs, and claspers remain unchanged.

The larva generally rests in a nearly straight position, but sometimes a good deal curved in the form of a fish-hook, but more often only slightly curved; it lives entirely upon the under surface of the leaf, and spins a fine layer of silk between the ribs upon which it rests. After each meal it turns round, and retracing its steps rests in the same place as before, and with its head furthest from the part eaten; it feeds upon the spines, smaller ribs, and whole substance of the leaf excepting the largest mid-ribs, making large perforations in the leaf. During the act of defecation the larva elevates the posterior end, and, curving the anterior part of its body round, it takes the excrement in its mouth and jerks it away; if not successful in its first attempt to jerk it aside, it brushes it from its mouth with the long stiff dorsal hairs on the hinder segments.

Directly after emergence from the egg the larva, upon being touched, exudes a bead of greenish black fluid from its mouth, and remains immediately afterwards perfectly still, as if paralysed, but only for about fifteen or twenty seconds.

Since the hatching of the eggs the weather remained dull and cold, the average day temperature being only about  $52^{\circ}$ ; therefore the growth of the larvæ during the first stage was undoubtedly considerably retarded. The first moult occurred on May 14th, when a large number moulted.

Before second moult the larva, when fourteen days old, measures  $\frac{9}{16}$  in. in length, and rather stout in proportion; the ground colour is pale drab, shading into ivory-white on the lateral and under surface, chequered with brownish black; there are seven longitudinal rows of spines placed medio-dorsal, sub-dorsal, super-spiracular, and sub-spiracular, each spine terminating in a rather long finely-pointed bristle, and bearing other shorter and very fine bristles; all the spines are black, excepting those on the 5th, 7th, and 9th segments of the medio- and sub-dorsal rows, which are white, the white spreading over the dorsal surface of those segments, and is very conspicuous; the bases of

the dorsal spines on the 2nd and 3rd segments, as well as the greater portion of the first and last segments, are of the same ivory-white colour; there are no spines on the 1st segment; the head is shining black, with two short blunt tubercles on the crown, one on each lobe, and emit a number of black bristles; the surface of the head is scattered with numerous black hairs; the legs are black and white, the claspers whitish with black extremities. They rest in the same attitude as in the previous stage, and always upon the under surface of the leaf.

Second moult, May 21st. After the second moult, twenty-six days old, it measures  $\frac{7}{16}$  in. long; the body is cylindrical and of uniform thickness throughout; the ground colour is of a dark olive-brown, reticulated with white along the dorsal and sub-spiracular region; the dorsal pair of spines on the 2nd and 3rd segments are amber-yellow, those on the 4th segment (where the medio-dorsal series commences) are all black; the three dorsal spines of the 5th segment are paler yellow, and creamy white on the 7th, 9th, and 12th; all are black on the 6th, 8th, 10th, and 11th segments; all the spines are furnished with very finely pointed black spinelets; the creamy white surrounding the bases of the white and pale amber spines form large conspicuous markings. All other details are similar to the previous stage, and their habits are the same.

Third moult, June 1st. Shortly before the fourth moult, and thirty-four days old, it measures, while extended,  $\frac{9}{16}$  in.; the ground colour is black, the 6th to 10th inclusive segments have the dorsal surface encircling the medio- and sub-dorsal spines of a milky white colour, the 11th segment has the anterior half white; all the dorsal spines of the 2nd, 3rd, 4th, and 5th segments are amber-yellow; all the super-spiracular spines are black, and are situated on amber-yellow crescentic markings; those of the sub-spiracular series are greyish, and placed on a creamy-white streak; a curved amber-yellow streak passes directly below the spiracles, which are outlined with whitish; the body is encircled by two white lines at the segmental divisions, but those on the anterior part being pale yellow.

Fourth and last moult, June 8th. After fourth moult and fully grown, forty-five days old, it measures from  $1\frac{1}{4}$  in. to  $1\frac{3}{8}$  in. in length, when extended while crawling; the body is almost uniform in thickness, the first and last segments only being the smallest; each segment is much swollen round the middle, so that the larva has the appearance of being tightly girdled at the juncture of each segment; there are seven longitudinal rows of spines from the 4th to 11th segments inclusive, which are situated in the following order: each having a medio-dorsal, sub-dorsal, super-spiracular, and sub-spiracular spine, the medio-dorsal spine being a little in advance of the rest; the 2nd, 3rd, and 12th segments have each four spines; all those on the 2nd, 3rd,



4th, and 5th are amber-yellow, excepting the sub-spiracular, which are white; all the other spines on the body are white, excepting the super-spiracular series, which are tinged with ochreous; all the spines are branched, each branch or spinelet is tipped with amber, and each spine also emits a number of very fine white hairs; the 1st segment is without spines, but has a transverse series of short and slender orange tubercles, each terminating by a fine pale hair curving forwards; the head in front is flattened and square, the lobes of the crown are swollen, and each surmounted by a short club-like knob directed forwards and outwards; upon the clubbed apex are five or six minute orange spines, each bearing a long fine amber-coloured hair; other similar spines are dotted over the face, the ground colour of the head is dull black, with a pale ochreous central  $\Lambda$ -shaped mark, and a short orange streak in front on each lobe of the crown. The ground colour of the body is black, reticulated with lilac-grey; the anterior half of the body is transversely ringed with amber-yellow at the segmental divisions, and those on the posterior half are white dorsally and yellow laterally; the greater part of the dorsal surface of the 2nd, 3rd, 4th, and 5th segments is amber-yellow; from the 6th to 10th segments inclusive have almost the whole of the dorsal surface white, with a short oblique black mark in front of each sub-dorsal spine, also a smaller black spot in front of the medio-dorsal spines, and a fainter one behind; the white surrounds the sub-dorsal spines, and is bordered below by velvety black, then by a rich deep orange wavy longitudinal super-spiracular band, and a similar but paler orange sub-spiracular band, both being united by an oblique narrow streak of deep orange, passing immediately behind the spiracles; on these bands are placed the spines; a short straw-yellow streak occurs anterior to and just above the claspers; at the base of each clasper is a row of four or five small orange warts, each bearing a fine white hair; the body has several minute warts sprinkled over the surface, each emitting a delicate white hair; the legs are shining black; the claspers grey at the base, shining black in the middle, with pale ochreous extremities. When about to suspend itself for pupation the white of the dorsal surface changes to a greyish hue.

The larvæ are gregarious, living generally in small companies, but sometimes many will crowd upon a certain leaf; their habits are similar in all stages, the usual resting attitude resembling the form of a fish-hook. The larva suspended itself for pupation on June 20th, and pupated the following day, the larval state lasting forty-seven days.

(To be continued.)

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## A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

BY W. F. DE VISMES KANE, M.A., M.R.I.A., F.E.S.

(Continued from p. 240.)

**XYLOPHASIA RUREA**, *Fb.*—Common everywhere. Irish specimens appear to be generally more marbled and brightly variegated than the common run of English. The type, with grey ground and dark markings, is not frequently met with (Howth, Kingstown, Drumreask, Monaghan, and Sligo). Some examples have the ordinary markings very strongly contrasted with the pale ground colour, approaching forms from the Hebrides, in Mr. Barrett's collection; and others from Mr. Reid, of Aberdeen. The forms *ochrea*, *flavo-rufa*, and *intermedia*, of Tutt, are taken as aberrations in Ireland, the latter at Drumreask. The var. *combusta* occurs very frequently with type, and seems distributed everywhere, and varies from a rich mahogany colour to a chocolate-brown, which latter is rare. Localities: abundant at Farnham, Co. Cavan, and Favour Royal, Tyrone; Drumreask, Co. Monaghan, Armagh (*J.*); Markree and about Sligo; Clonbrock (*R. E. D.*) and Ardahan, Co. Galway; Howth, Co. Dublin; Kenmare and Killarney, Co. Kerry. When compared with the ordinary Scandinavian form, we have in Ireland both the greyer type and much more richly variegated forms. Our var. *combusta* is identical.

**XYLOPHASIA LITHOXYLEA**, *Fb.*—Widely distributed and pretty common.

**XYLOPHASIA SUBLUSTRIS**, *Esp.*—A local insect, and apparently more abundant in Connaught than the other provinces. The Irish moth is of a very ruddy tone, usually strongly marked with rust-coloured design, and belongs to Hübner's var. *lithoxylea*. Occasional specimens have the rust-coloured patches fainter; and Clonbrock produces the palest, and Banagher the ruddiest Irish examples that I know. Favour Royal, Co. Tyrone; Howth, Cabra a few (*C. G. B.*), Co. Dublin; Tinahely, Co. Wicklow, one (*Bw.*); Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*), Co. Westmeath; near Banagher, King's Co., very abundant; Dromineer, Co. Tipperary, abundant; Claring Bridge, very abundant (*B.*); common at Clonbrock (*R. E. D.*) and Ardahan (*Miss N.*), Co. Galway; Knocknarea, abundant (*Russ*), and Markree, Co. Sligo.

**XYLOPHASIA MONOGLYPHA**, *Hufn.*—Universally common. The varieties presented by this insect do not appear to be topomorphic, with the exception mentioned below. A brightly variegated form, with a very black design on an almost white ground, is common at Kilcool, Co. Wicklow, and occurs at



Clonbrock, Co. Galway, Howth, Favour Royal, Co. Tyrone, and near Cavan. With it the var. *æthiops* and the greyish brown type also occur. The var. *brunnea* of Tutt is rare; I have seen specimens in the North and West, and in Co. Louth. The vars. *æthiops* and *infuscata* are widely spread over most parts of Ireland, with the type. The localities below refer to both, there being no distinctive character notable, except the comparative depth of colours. Common at Renvyle, Connemara; and Lambay I. near Howth; and not rare at Favour Royal, Co. Tyrone, and Castlebellingham, Co. Louth. Also at Derry (*C.*); Toberdaly and Banagher, King's Co.; Killynon, Westmeath; Magilligan, Co. Derry; Armagh (*J.*); Sligo and Markree Castle, occasional; and similarly throughout Cork and Kerry generally. The suffused brown form var. *obscura*, Tutt, is also widely distributed, and appears to be a local form on some of the rock islands off the Kerry coast.

XYLOPHASIA HEPATICA, *L.*, var. *characteræa*, Hb.—Very local, and not numerous. The few Irish specimens taken up to the present seem referable exclusively to the rich liver-coloured mottled form. Powerscourt, Co. Wicklow (*Greene*); Kingstown, Co. Dublin, one specimen (*S. R. F.*); Farnham, Cavan; Favour Royal and Altadiawan, Co. Tyrone; and Roche's Point, Co. Cork.

DIPTERYGIA SCABRIUSCULA, *L.*—One at Clonbrock, Hon. R. Dillon.

CLOANTHA POLYODON, *Clerck.*—One at sugar, July, 1891, at Clonbrock, Co. Galway, by Hon. R. Dillon (*Entom.* xxvii. 170).

APOROPHYLA AUSTRALIS, *Bdv.*—Coast of Wicklow, and Waterford (*Entom.*, 1872, p. 140). Sand-hills off Wexford Harbour, not scarce. Those I have taken at the latter locality are somewhat strongly marked with black.

NEURIA RETICULATA, *Vill.*—Local and scarce. One at Kingstown many years ago (*Greene*); one at Glandore (*D.*); three at Roche's Point, Co. Cork.

NEURONIA POPULARIS, *Fb.*—Generally distributed, and in some localities very abundant, as at Clonbrock, and on the Wicklow coast.

CHARÆAS GRAMINIS, *L.*—Universally common. Of the various aberrations described by Mr. Tutt, most occur sporadically throughout Ireland, including var. *hibernicus*, Curt., which, however, I have never seen. The most varied series I have met with was taken on the shores of L. Swilly, Co. Donegal, by my friend Geo. V. Hart, LL.D.

(To be continued.)

## NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, Ph.D., F.L.S., &amp;c.

(Continued from p. 241.)

## PANULA, Guen.

*Panula inconstans*.*Panula inconstans*, Guenée, Noct. 3, p. 59, n. 1892 (1852).*Ophiusa narrans*, Walker, Lep. Het. xiv. p. 1828 (1858).*Athymra tetragona*, Walker, l. c., Suppl. 3, p. 965 (1865).

St. Domingo, Honduras, and Jamaica. In B. M.

This moth is nearly allied to *Melipotis*, and varies even more than the species of that genus. In spite of Guenée's locality, I doubt its occurrence in North America; any way, the example labelled "*Panula inconstans*" in Grote's collection was *Melipotis cellaris*. Walker's *O. narrans* is typical *P. inconstans*, and of the same sex as Guenée's type. In view of the variability of this genus, I do not, for a moment, believe in the specific distinctness of the named forms of the allied genus *Synedoida*. Nevertheless, until proved to be mere sports of one variable species, I retain them under their distinctive names.

*Homoptera vilis*, Walk., appears to be a *Eubolina*.

## ELOUSA, Walk.

*Masebia*, Walk.*Elousa albicans*.♀ *Elousa albicans*, Walker, Lep. Het. xiii. p. 1119, n. 1 (1857).♂ *Erastria includens*, Walker, l. c., xv. p. 1761 (1858).♂ *Masebia famelica*, Walker, l. c., xv. p. 1772, n. 1 (1858).

St. Domingo. In Coll. B. M.

In my opinion, *Homœa*, Guen., is best placed here.

## PANTYDIA, Guen.

*Pantydia sparsa*.*Pantydia sparsa*, Guenée, Noct. 2, p. 437, n. 1308 (1852).*P. recondita*, Walker, Lep. Het. xiii. p. 1039, n. 3 (1857).*Toxocampa orthosiodes*, Walker, l. c., Suppl. 3, p. 873 (1865).

Australia generally. In Coll. B. M.

*Pantydia metaspila*.*Toxocampa metaspila*, Walker, Lep. Het. xiii. p. 1032, n. 12 (1857).*Ophiusa pallidilinea*, Walker, l. c., xv. p. 1832 (1858).*Toxocampa moolla*, Swinhoe, P. Z. S., 1885, p. 459, pl. xxvii., fig. 10.*Hypætra sordida*, Butler, Trans. Ent. Soc., 1886, p. 414.

Ceylon, Poona, Java, Fiji. In Coll. B. M.

My determination of the genus of this species was nearer to the mark than either *Ophiusa* or *Toxocampa*; the latter is, of



course, wildly incorrect, since *Toxocampa* belongs to the Trifidæ of Guenée. There is nothing whatever in *P. metaspila* to distinguish it from *Pantytia*: *Toxocampa atriplaga*, Walk., from Natal, must be referred to the same genus.

Walker's *Poaphila ingenua* (= *Phoberia atomaris*, Hübn.) and *P. porrigens* (= *basigutta*, = *Lyssia orthosoides*, Guen.) from the United States, which somewhat resemble *P. metaspila*, are species of *Ophisma* allied to the European *O. lunaris*, Schiff.

#### OPHYX, Guen.

##### *Ophyx ochroptera*.

*Ophyx ochroptera*, Guenée, Noct. 3, p. 234, n. 1644 (1852).

*Ophisma resignans*, Walker, Lep. Het. xiv. p. 1385, n. 36 (1857). Moreton Bay. In Coll. B. M.

#### CELIPTERA, Guen.

##### *Celiptera frustulum*.

*Celiptera frustulum*, Guenée, Noct. 3, p. 308, n. 1767 (1852).

*Litomitius elongatus*, Grote (see Check-List, p. 41, n. 1260).

*Remigia discissa*, Walker, Lep. Het. Suppl. 3, p. 1009 (1865). United States. In Coll. B. M.

In my opinion, Guenée's genus *Nymbis* cannot be very distant from *Celiptera*, and I fail to see how to distinguish it generically from *Phurys*; on the other hand, *Phurys helvina*, Guen., is a *Celiptera*, whilst *Nymbis iniqua* goes better with *Phurys*. The three genera are, I believe, only separable by pattern, for the relative lengths of the palpal joints will not separate them. In *N. iniqua* the third joint of the palpi in the male is as long as the second, and therefore does not bear out Guenée's character, "le troisième article moitié moins long que le second," which is only true of the female. Of course, *Phurys arcuata*, Walk., cannot be generically distinguished from *Nymbis textilis*, so far as can be judged from the figure of the latter species. I have therefore placed it, for the present, under that generic heading.

##### *Celiptera optabilis*.

*Phurys optabilis*, Walker, Lep. Het. xiv. p. 1485, n. 14 (1857).

*Poaphila basilinea*, Walker, Char. Het. Lep. p. 54, n. 91 (1869). Honduras, Limas, Espiritu Sancto. Types in B. M.

This species is very suggestive of *Nymbis textilis*, but the arched second pale stripe, bounding the dark external area, is wanting.

##### *Celiptera helvina*.

*Phurys helvina*, Guenée, Noct. 3, p. 307, n. 1765 (1852).

*P. lineolaris*, Walker (not Hübner), Lep. Het. xiv. p. 1483 n. 9 (1857).

Honduras and Bogota. In Coll. B. M.

*Phurys glans*, Grote, would stand better under this genus near *C. frustulum*.

*POAPHILA*, Guen.

*Phurys*, Guen.

In his description of *Phurys*, Guenée, comparing it with his genus *Poaphila*, says:—"Il est manifeste qu'ils doivent être séparés, et il est difficile d'expliquer pourquoi." Well, I agree with the latter part of the sentence, and I fail to follow the first part; therefore I sink *Phurys* as a worthless synonym. Under his first species, *P. vinculum*, Guenée himself says:—"Cette espèce lie le genre *Poaphila* et le genre *Phurys*." This should be conclusive!

(To be continued.)

## ON THE LEPIDOPTEROUS GENUS *HEXERIS* OF GROTE.

By A. G. BUTLER, Ph.D.

OF this genus Grote says that it seems distantly related to *Syllectra*, and that in its colour and ornamentation it resembles some of the Geometridæ. He concludes that it is a Noctuid, on the ground that the lower radial of the primaries is given off near the posterior angle of the cell.

The fact that the lower radial is thus situated is so far from proving it a Noctuid, that (if it were sufficient of itself for that purpose) half the other families of moths might equally be called Noctuidæ.

Professor Smith, in his 'Catalogue of Noctuidæ,' includes the genus *Hexeris* (p. 376), and observes:—"A very distinct form, the type of which is in the British Museum. I had not seen it previously."

As a Noctuid it would indeed be a very distinct form; but as it is a Thyridid, and a very typical one, both in structure, colouring and pattern, one cannot regard it as "*very distinct*."

In Mr. Hampson's 'Fauna of British India, Moths,' vol. i., p. 352, the Thyrididæ are thus characterized:—"Moths generally with hyaline patches and striæ on the wings. Palpi obliquely upturned and slender. Antennæ almost simple. Fore wing with vein 1*a* forming a fork with 1*b* at base; 1*c*, absent; 5 from near lower angle of cell. Hind wing with two internal veins; vein 8 nearly touching vein 7, just before or after end of the cell. Mid-tibia with a pair of spurs; hind tibiæ with two pairs."

These characters correspond in every respect with those of *Hexeris*, which belongs to the group having striated wings without hyaline patches. In its thickened antennæ and elongate palpi it approaches Walker's genus *Pharambara*.



## NOTES AND OBSERVATIONS.

THE SUPPOSED NEW SPECIES OF *EUCHLOË*.—Regarding the description of the supposed new British butterfly *Euchloë hesperides*, Newnham, I should like to make a few remarks. I have noticed in a small series in my own collection that many of them differ (some rather considerably) in the shape of the discoidal spot, and also in the size of the orange patch in the males, but neither of these features seem in any way constant, except in the case of the small male and female captured at Kennington (Ent. Rec. v. p. 172), when the discoidal spot is extremely small. Again, in the males the apical blotch is very large and dark, but in the small female the blotch is very small, in fact almost obsolete, and of a grey colour. I stated that I believed that the small variety was called var. *turritis*, Ochs., on the Continent; this I have since verified, and also cannot find any distinguishing feature regarding the wing-scales. I am not prepared to assert that the small form is distinct enough to be considered as a distinct species, unless it is shown to differ in its earlier stages. Again, too much stress must not be made upon the orange spot, because this is certainly not a constant feature. The following note may explain something regarding the small variety (Entom. xiii. 139):—"With respect to *A. cardamines*, which is double-brooded on the hills which border the Garonne, at two leagues distance from the city. Collectors in Bordeaux despise the first brood, which appears in March and April, because it is smaller and less beautiful, and go in search of the specimens of the second brood, which are remarkable for their large size and brilliant colouring. . . . . The Bordeaux type of *A. cardamines* would not fail to pass as large and more brilliantly coloured than the specimens of the north, and nomenclators of varieties would not fail to christen it as perhaps *cardaminoides* (A. Wailly)."—JOHN W. SHIPP.

PAPILIO MACHAON FOURTEEN MONTHS IN PUPA.—I took two full-grown larvæ of *P. machaon* in one of the oases near Biskra (South Algeria) on April 11th, 1893; they pupated at once, and assumed different colours. One was of a brownish dead-grass tint, and from this a butterfly emerged in England on May 6th; the other was green, and did not produce a butterfly until June 9th, 1894.—W. M. CHRISTY; Watergate, Emsworth, Hants.

A PUZZLE.—On the 18th and 20th of July last I captured a couple of larvæ feeding on a species of *Aconitum* in a garden at Penzance: one, taken on the former date, was about half-fed, and was green, the intersections of the middle segments being whitish; the other, nearly full-fed, about an inch and three-quarters in length, was of a darker, more velvety green, the capital segment being also green; but both were evidently of the same species, as each rested with the anterior third of the body pressed against the middle third of the left side, a position reminding one somewhat of a hook. The younger larva I gave to my friend Mr. W. E. Baily; the larger one I brought home, when it went to earth on the 24th. I was inclined to think that these larvæ might pertain to *Plusia moneta*, as no other species, excepting *Plusia illustris*, that I am aware of, feeds upon monkshood; but subterranean

pupation is certainly not the general habit of that species; so perhaps they may belong to some omnivorous *Noctua* which has accidentally taken to the unaccustomed plant; but, if so, why two of them, with evidences of their having been more! Should Mr. Bailly's or my specimen yield forth its imago, you shall be duly advised of the occurrence.—H. GUARD KNAGGS; Camden Road, N.W., Aug. 13th, 1894.

UNUSUAL PAIRING OF LEPIDOPTERA.—When collecting in an oak wood a few miles from here, I saw a male *Argynnis paphia* in copulâ with a female *Thecla quercus*. I am sorry to say, that, though I secured the *paphia* the *T. quercus* escaped, as I wished to preserve the insects as they were.—SPOTSWOOD GRAVES; Tenby, July 21st, 1894.

[Other instances of unusual pairing have been recorded from time to time, among which may be cited the following:—*Attacus cecropia*, male, and *Sphinx ligustri*, female, Entom. xix. 136; *Taniocampa stabilis*, male, and *T. gothica*, female, *Cerastis vaccinii*, male, and *Miselia oxyacanthæ*, female, *Euchloë cardamines*, male, and *Bapta temerata*, female, *Xylophasia monoglypha*, male, and *Hadena trifolii*, female, Entom. xxi. 158, 188, 282.—ED.]

ABUNDANCE OF *ACIDALIA VIRGULARIA*.—So numerous are the accounts that one hears of the scarcity of *Lepidoptera* this summer, that the occurrence of any species in profusion is quite a refreshing incident. Nor have our London gardens afforded an exception to the prevailing rule, and it is to such situations that I now more particularly refer. Many of our usually common species have been singularly scarce; *Spilosoma lubricipeda* and *S. menthastri*, *Mamestra brassicæ* and *M. persicariæ*, and *Euplexia lucipara*, have, at any rate, so far as concerns my own garden, been hardly seen; and even that essentially garden insect, *Melanippe fluctuata*, has certainly not exceeded its usual numbers. But to this dearth we have had one notable exception: *Acidalia virgularia* (*incanaria*) has been more or less common throughout the months of June and July, and during the latter half of the last-named month abundant, four or five being seen at rest on as many square feet of wall almost daily, and a tap on the Virginia-creepers or other sheltering foliage dislodging numbers of the insect. So rapid are the succession of broods of this species, that it is difficult to differentiate the spring and summer emergences with any degree of certainty; but there can, I think, be little doubt that the examples seen in the earlier part of June would be the true spring emergence, and that the larvæ resulting from it would have the advantage of the only really warm weather that we have had to complete their metamorphoses; and this may possibly account for the profusion of the later broods.—R. ADKIN; Lewisham, August, 1894.

NOTE ON *VANESSA C-ALBUM*.—In April last I caught an example of *V. c-album*, and finding it a poor specimen liberated it, and watched it hovering over a red currant bush in my garden here. On the last day of June I found a nearly full-grown caterpillar on that very bush, which, from the accurate description given in Newman's 'Moths and Butterflies,' I at once recognised as that of *V. c-album*. On July 3rd I discovered a chrysalis of this butterfly on the same bush, hanging in



the orthodox way, *i. e.*, head downwards from a dead twig, and from this a dark coloured and very perfect specimen subsequently emerged. On Sunday, July 15th, my caterpillar, which had also turned into a chrysalis a few days after I took it, went through its last transformation, a fulvous yellow butterfly emerging.—W. P. J. LE BROcq; The Preparatory School, Brecon, July 24th, 1894.

**PLUSIA FESTUCEÆ.**—This moth seems to vary in its economy in different localities. At Bolton, where I have taken it for many years, half-grown larvæ are found in April, and full-grown larvæ up to the middle of June; the food-plant is almost always the yellow iris. The pupa is generally in a bend of the iris leaf, about two inches from the point, and the moths begin to emerge at the end of June. I do not think a second brood occurs at Bolton; I and others have looked for it in vain. I never took the imago at Bolton, but at Galway last season (an exceptionally early season) I took one on May 28th and one Sept. 20th. I failed to find the larvæ on iris at Galway. Possibly in places where the iris flowers early the leaves may be too old for the larvæ to feed on, so that they are driven to find some other food-plant. At Galway the iris flowers in May, but at Bolton not till late in June.—J. E. R. ALLEN; The Grammar School, Galway, Aug. 15th, 1894.

**VARIETIES OF ZYGÆNA PILOSELLÆ AND BRYOPHILA MURALIS AT GALWAY.**—Among a large number of *Z. pilosellæ*, taken here last June, I have one of a yellow variety which occurs in some other species of the genus, the red on all the wings replaced by pale yellow. *B. muralis* is common here, and I have taken one curious specimen in which both wings on the left side have the colouring apparently only partially developed. The discoidal spot on the fore wing is present, and some of the black markings are abnormally large, but the green colour is scarcely perceptible, and the general appearance is rather that of an under side. The pupa had probably received some injury near the base of the wing-case immediately after casting the larval skin; the moth had the wings on the left side dislocated, and appeared unable to fly.—J. E. R. ALLEN.

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## CAPTURES AND FIELD REPORTS.

**DRAGONFLIES OF THE VICINITY OF THE BLACK POND, ESHER.**—Although the early spring gave promise of a good dragonfly season in this neighbourhood, yet during the wet and cold weather of May and early June these sun-loving insects were scarcely to be found, and it is but lately that they have again appeared in any numbers. Since my last note (*ante*, 220) the following insects have to be recorded:—On June 17th a male *Sympetrum depressum* was taken, while on June 23rd *Agrion puella*, *A. [Enallagma] cyathigerum*, *A. [Pyrrhosoma] minium*, and a male and female *A. [P.] tenellum* were captured or seen. On July 25th dragonflies were fairly plentiful at the pond, and we noticed *Libellula quadrimaculata*; *A. puella* and *A. [P.] tenellum* in large numbers; and *L. [Sympetrum] scotica* in fair abundance. Our attention, however, was chiefly directed to *Anax formosus*, a male of which species fell to the lot of my companion. A few days later

(Aug. 4th) we again went in quest of this splendid dragonfly, and after a long morning's work my companion was a second time fortunate enough to secure a specimen—this time a female. On Aug. 7th we gave four or five hours' attention to *Anax*, and although many were seen, few came anywhere within striking distance, and but one, a fine female, was taken, that falling to my lot. On the same occasion *Æschna grandis* put in an appearance, but was wily enough to evade capture. — W. J. LUCAS, B.A.; 2, Gordon Road, Kingston-on-Thames, Aug. 8th, 1894.

**ANAX FORMOSUS IN SURREY.**—On July 25th last, while collecting in Claremont Woods, near Esher, Surrey, I had the good fortune to take a male specimen of the magnificent dragonfly, *Anax formosus*, which approached too near the edge of the pond, over which several other dragonflies, apparently of the same species, were flying. On August 4th, at the same place, after trying for a long time without success to capture another male, I with comparative ease took an example of the female. It unfortunately had its wings a little worn, but was otherwise a fine specimen.—J. S. BROOKLESBY; 17, Fairlawn Villas, Merton, Surrey, August, 1894.

**PIERIS DAPLIDICE AT MARGATE.**—As the practice of closely observing white butterflies on the chance of taking *P. daplidice* had been followed by me without success for a period exceeding forty years, there seemed little hope of my ever receiving a reward for my pains; but, *mirabile dictu*, whilst walking on the Margate Cliff on July 9th, a fine example of this beautiful insect passed before me almost at my feet, battling with the wind, and persistently chased by a male *P. napi*. Of its identity on the wing there could be no doubt, so clearly perceptible were its distinctive markings; for one instant, too, it settled, but alas! I was without net, and hesitated to use my head-gear, which probably would have spoiled the insect. The next moment the two butterflies disappeared over the cliff, and much I feared that the *daplidice* would be seen by me no more. I returned, however, to the spot in the afternoon, with the advantage of my net, but to my disadvantage the wind had increased in force, rendering the butterflies very wild. Amongst them I soon recognised my *daplidice*, which, after some futile efforts, I at last captured, and had the satisfaction to find a male specimen absolutely perfect. On the following day, in the same place, I took a beautiful female specimen, evidently fresh from the chrysalis. Squalls and storms supervened, with damage to Lepidoptera, and the only further record I have to report is that of the capture by my son, on July 15th, of a somewhat injured specimen, which serves as an inverted example.—SIDNEY COOPER; Hawkwood, Chingford, August 1st.

**SMALL SPECIMENS OF EUCHLOË CARDAMINES.**—On May 14th last I took on the wing, near Oxshott, Surrey, a very small specimen of *E. cardamines*, measuring (unset) 32 mm. (when set about 29 mm.) from tip to tip of the fore wings. As it answers exactly the general appearance of the supposed new species referred to in the 'Entomologist' for July (*ante*, p. 218), I thought it might be interesting to mention it. On April 3rd last a small female, 38 mm. in expanse when set, emerged in the breeding-cage, the larva from which it was bred having been taken in the same locality as the male noted above. About this larva I observed nothing exceptional, and the resulting pupa was small and of a very dingy pale yellowish green colour. If my memory serves me, the larva was rather scantily supplied with food, and this I took to be the reason for its small



size, and concluded that the dwarfed proportions of the captured male might also be attributed to the same cause.—W. J. LUCAS; 2, Gordon Road, Kingston-on-Thames, August 6th, 1894.

ARGYNNIS PAPHIA IN MIDDLESEX.—On July 31st, at four o'clock in the afternoon, a friend of mine, Mr. C. Ollett, of Wealdstone, caught a fine male specimen of *Argynnis paphia* on Stanmore Common. — C. RHOADES SMITH; Station Road, Greenhill, Harrow.

ARGYNNIS LATONA IN JERSEY.—On July 21st my brother, who is at school in Jersey, captured an example of *A. latona*. As I happened to be in the island at the time, I killed and set the specimen, and it is now in my possession.—J. M. NORMAN; 12, Church Road, Cauton, Cardiff, Aug. 2nd.

VANESSA POLYCHLOROS IN DEVON.—On June 23rd I picked up a larva of this insect under an elm tree; it assumed the chrysalis state on July 3rd, and the perfect butterfly emerged on July 19th. The species is becoming rare in this district.—J. BUCKLAND; Taunton, July 22nd, 1894.

ABERRATION OF POLYOMMATUS PHLŒAS.—A very beautiful aberration of this pretty species was taken here in April last by Mr. Richmond. It has the costal margin of both fore wings, the outer margin of the right fore wing, and the marginal band on both hind wings white, the hind margin of the left fore wing being normal. It is therefore entirely bordered with white except this one margin, and has a very curious appearance. It was captured on the railway embankment, where the species is not uncommon. Mr. Richmond has most kindly given me the specimen.—JOHN E. ROBSON; Hartlepool.

ACHERONTIA ATROPOS IN SUFFOLK.—Whilst staying at Bramfield, near Halesworth, on July 16th, I was handed a good specimen of *Acherontia atropos*, caught in the early morning, on July 2nd, clinging to linen on a clothes-line. This had probably arrested its flight, and caused it to settle.—CLAUDE A. PYETT; Thornley Place, Waterloo Road, Ipswich.

PLUSIA MONETA IN NORFOLK.—I am pleased to record a capture of very great interest and rarity. The insect, which is a perfect specimen, is, on the authority of Mr. C. G. Barrett, undoubtedly *Plusia moneta*. It was taken by my younger brother at Sprowston, near Norwich, on June 26th, whilst hovering over the flowers of a large rose-bush, about 9.30 p.m.—F. C. TILLET; Sprowston Lodge, Norwich, July 25th, 1894.

PLUSIA MONETA IN KENT.—I have again taken a very fine female *Plusia moneta* (on July 16th) in the same garden near here, making now seven in all. I obtained some ova from this last one, but unfortunately they are infertile.—R. A. DALLAS BEECHING; 24, St. James Road, Tunbridge Wells.

PLUTELLA CRUCIFERARUM.—This species seems to be fairly common on all the moors above the town. As a rule the moths do not fly until about 7 or 8 o'clock in the evening, but are freely disturbed from heather and bilberry by day. So far as I have had opportunity of observing the root-crops about this district, they seem to be free from attack, but I understand that the larva of *P. cruciferarum* (the diamond-back moth) is causing considerable damage to turnips, &c., in the East Riding of Yorkshire.—RICHARD SOUTH; Oxford Road, Macclesfield, Aug. 13th, 1894.

**ABERRATION OF AGROTIS CORTICEA.**—The Rev. W. Claxton, of Hartley Wintney, Winchester, has very kindly sent for inspection a curious variety of *A. corticea*, which he captured this year. The fore wings are dark smoky brown, with a pale brown spot before the orbicular, and another between the orbicular and reniform stigmata; the submarginal line is black, and the marginal area beyond this line is pale brown, giving the insect a remarkable appearance. The hind wings are fuliginous, with a bluish grey suffusion in certain lights; fringes greyish.

**CIRRHÆDIA XERAMPHELINA IN AYRSHIRE.**—On Aug. 4th there emerged, in one of my breeding-cages, a specimen of this moth. Three larvæ were taken when beating blackthorn on April 20th, but as the branches of an ash-tree swept through the thorn-bushes, they in all probability came from those. Not knowing what the larvæ were, and supposing them to come from the thorn, they were, together with a number of larvæ of *Rumia luteolata*, fed on blackthorn, sallow, and wild apple, a sprig of each being always in the cage. They commenced to spin on May 5th, two between the moss and earth, the other among the leaves of the food-plant. In the case of the last one, the other larvæ devoured the leaves utilised before the cocoon was complete; the caterpillar thereafter falling to the bottom of the cage, made no attempt to again spin, but half-turned and died. One has attained the perfect state, as above stated; the other, I am afraid, has dried up. This species is, I believe, considered rare in the West of Scotland. Since the above was written, while sugaring some thistles in the evening of August 9th, a moth alighted on one adjoining; it was promptly bottled, and proved a rather worn specimen of *Plusia bractea*. *Nisoniades tages*, *Strenia clathrata*, and *Euclidia glyphica* were very plentiful here in May, but confined to one locality. — WILLIAM C. S. FERGUSSON; Glencoy, Ayr, Aug. 10th, 1894.

**ACENTROPUS NIVEUS ABUNDANT IN IRELAND.**—In sunny calm weather *A. niveus* skimmed rapidly over the surface of the water, though appearing not to be the least affected when held under the water. All those which I took were obtained between July 10th and 20th. I found them mostly at rest, generally in pairs, on the blossoms of *Potamogeton*. They occur exclusively round the shores of the lake where this plant grows, and may be captured in large numbers.—ENDYMION PORTER; Belleisle, Lisbellaw, Co. Fermanagh, August 15th, 1894. [The above is an extract from a letter received from Mr. Porter, to whom we are indebted for specimens of the insect referred to.—ED.]

**PACHETRA LEUCOPHÆA IN KENT.**—I beg to record the capture of *P. leucophæa* on June 16th at Wye. One female laid a fine lot of eggs in a diamond-shaped patch on the box; these hatched, but I turned out the larvæ, as I did not value them after reading certain remarks concerning the species. Two years ago I took a female at rest on the bank-side, three miles from Mr. Parry's famous locality, the Kneading Trough. — D. CHITTENDEN; Wellesborough Lees, Ashford, Kent, August 11th, 1894.

**A PROPOSED LIST OF DERBYSHIRE MACRO-LEPIDOPTERA.**—I am, with the assistance of my entomological acquaintances, compiling a list of the Macro-Lepidoptera occurring in Derbyshire, and, to make the list as complete as possible, shall be greatly obliged if readers of the 'Entomologist' in the county would forward me lists of the species they have met with.



Any notes as to localities, rarity, &c., would be acceptable. — FRED. W. G. PAYNE; Hughenden House, Sale Street, Derby.

*ODONTEUS MOBILICORNIS* AT SHIRLEY WARREN.—A female specimen of *O. mobilicornis* flew in to my study on the evening of July 27th, and was secured on my writing-table. This is a curious instance of history repeating itself, as my house is within forty yards of the house in which Dr. Sharp secured the specimen he records in the Ent. Mo. Mag. for July, on which occasion also I was present. I might mention that at the moment when the *Odontæus* flew round my lamp I was looking at a female oak-egg-moth, which had settled on the table. — H. S. GORHAM; Shirley Warren, Southampton.

*ANOMMATUS* 12-STRIATUS.—Now is the time to look for *Anommatus*, in the old skins of the rotten set of potatoes which are just being dug. As potato-growers know, the old potato, called the set, often rots away, leaving only a skin, with perhaps a little rotten matter adhering to it. In these cavernous retreats the *Anommatus* may be found; I have just taken as many as eleven from one potato. It occurs in other subterranean vegetable matter; I have just taken seven from one small carrot that was split and partly decayed by being eaten by slugs. And my son, Mr. H. M. Gorham, once found ten in a puff-ball; but there is no special predilection for fungi on the beetle's part. — H. S. GORHAM; August 18th, 1894.

*PHOSPHÆNUS HEMIPTERUS* NEAR SOUTHAMPTON.—I have never recorded the capture of a male of this insect at Swathling, near here, but I believe this the only instance of its occurrence, except at Lewes. I swept the example from a weedy bank, but could not obtain any others. This was on July 9th, 1891. — H. S. GORHAM; August 20th, 1894.

COLLECTING IN THE NEW FOREST, 1894.—I was staying at Brockenhurst from June 8th to 17th with Mr. R. Wilson. The weather was very dull, although we had very little rain. Of the Rhopalocera, *Argynnis euphrosyne* was most abundant, *A. selene* was only just coming out when we left, *Hesperia sylvanus*, *H. tages*, *Syrichthus alveolus* (common, including one variety), *Lycæna argiolus* (one battered specimen), *Gonopteryx rhamni*, *Euchloë cardamines*, *Vanessa cardui* (abundant), *V. polychloros* (one specimen), *Pararge egeria*. Of the Heterocera, *Macroglossa fuciformis* and *M. bombyliiformis* flying over the rhododendrons at the Rhinefields, *Euthemonia russula*, *Lithosia aureola*, *L. rubicollis* (just coming out), *Bombyx rubi*, *Orgyia pudibunda*, *Euchelia jacobææ*, *Euclidia mi*, *Anarta myrtilli*. Of the Geometræ, *Aspilates strigillaria*, *Odontopera bidentata*, *Iodis lactearia*, *Corycia temerata*, *Macaria liturata*, *Panagra petraria*, *Fidonia atomaria*, *F. pinaria* (we beat the pine-trees for females, and got about a dozen; also one pupa of *Ellopia fasciaria*), *Ligdia adustata*, *Thera obeliscata*, *Cidaria corylata*, *C. russata*, *Larentia pectinitaria*, *Cabera pusaria*, *Melanippe montanata*, *Cleora glabraria*, *Tanagra chærophyllata*, *Ephyra punctaria*, *Venilia maculata*, *Anaitis plagiata*, *Boarmia consortaria*, *B. roboraria*, *Tephrosia crepuscularia*, *Melanthia ocellata*, *Eubolia palumbaria*. Larva-beating and searching were fairly productive; the most plentiful larva was that of *Vanessa polychloros*, of which we got about 150 off four trees; from a sawall a full-grown larva of *Apatura iris* fell into the beating-tray; the other larvæ being *Thecla quercus*, *T. betulæ*, *Argynnis paphia*, *Catocala sponsa*, *Tæniocampa miniosa* (off oak and bramble), *T. munda*, *T. stabilis*,

*T. instabilis*, *Cosmia trapezina*, *C. diffinis*, *C. affinis*, *Cymatophora ridens* (abundant), *C. flavicornis*, *Bombyx neustria*, *Dicranura vinula*, *Notodonta ziczac*, *Liparis monacha*, *Trachea piniperda*, *Scopelosoma satellitia*, *Diloba cæruleocephala*, *Ennomos fuscantaria*, *Amphidasys prodromaria*. We sugared every night, and did fairly well on the whole, although on the first occasion we only got one moth, viz., *Agrotis exclamationis*. We took the following moths:—*Grammesia trilinea* (a long series, including many varieties), *Aplecta herbida* (abundant), *A. tincta*, *Hadena dentina*, *Rusina tenebrosa* (most of them between 1 and 2 a.m.), *Thyatira batis*, *Noctua plecta*, *N. brunnea*, *N. festiva*, *Miana strigilis*, *Leucania comma*, *L. turca*, *Phlogophora meticulosa*, *Xylophasia monoglypha*, *Agrotis exclamationis* (abundant), *A. segetum*, *Hadena thalassina*, *Triphæna pronuba*, *Boarmia consortaria*, *B. roboraria*, *B. repandata*, *Tephrosia extersaria* (very abundant), *Campptogramma bilineata*, *Larentia pectinitaria*, *Acronycta rumicis*, *A. psi*, *Ephyra omicronaria*, *Melanippe montanata*. On the wing in the evening we took *Metrocampa margaritaria* (abundant), *Ellopie fasciaria*, *Larentia pectinitaria*, and *Hepialus hectus*.—H. O. WELLS; Hurstfield, The Avenue, Gipsy Hill, S.E., July 17th.

Below is a list of some of my captures during a week spent at the New Forest in July:—The *Rhopalocera* were fairly represented for the time of year. *Limenitis sibylla* and *Argynnis paphia* occurred in abundance on the bramble, while *Argynnis adippe* and *A. selene* were equally numerous on the thistle-grown railway banks. *A. aglaia* was taken singly, as were several newly emerged specimens of *Vanessa urtica*, *V. polychloros*, *V. atalanta*, and *V. cardui*. *Lycæna ægon* was the only "blue" taken in profusion, while *Thecla rubi* was the sole representative of the "hairstreaks." *Rhodocera rhamni*, *Pararge egeria*, *Satyrus semele*, *Epinephele hyperanthes*, *Hesperia thauwas*, *H. sylvanus*, and *H. comma* also occurred plentifully. Tree-trunk searching produced *Ellopie fasciaria*, *Boarmia roboraria*, *Tephrosia crepuscularia*, *T. biundularia*, *T. extersaria*, *Ephyra trilinearia*, and several species of the genus *Acidalia*. The moths taken during the day were:—*Lithosia mesomella*, *L. rubricollis*, *Euthemonia russula*, *Scodionia belgiaria*, and *Tanagra chærophyllata*; while *Hepialus hectus*, *H. lupulinus*, *Metrocampa margaritaria*, *Pseudoterpna cytisaria*, *Phorodesma bajularia*, *Hemithæa thymiaria*, *Melanthia albicillata* and *Cidaria fulvata* were netted at dusk. Sugaring produced *Nola strigula*, *Calligenia miniata*, *Boarmia repandata* (and the handsome black-banded variety), *B. roboraria* (eight specimens), *Gonophora derasa*, *Thyatira batis*, *Acronycta leporina*, *Leucania turca* and *L. lithargyria* (both plentifully), *Xylophasia hepatica*, *Grammesia trilinea*, *Triphæna subseque* (six specimens); this capture was the more remarkable, as only two other examples of this insect were taken during the week, although about a dozen entomologists were sugaring in the same locality. Other insects taken were *Noctua plecta*, *N. triangulum*, *N. brunnea*, *N. festiva*, *Epunda viminalis*, *Aplecta herbida* (six specimens, rather worn), *A. nebulosa* (a perfect nuisance), and *Hadena thalassina*. Larva-beating was not very productive. *Liparis monacha* (just about to spin up), *Amphidasys prodromaria*, *Cymatophora ridens*, *Trachea piniperda*, and a single specimen of *Notodonta trepida* being the only larvæ taken.—W. ILSTON COX; 33, Muschamp Road, East Dulwich, S.E.



## SOCIETIES.

**SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.**—*July 26th, 1894.*—E. Step, Esq., President, in the chair. Mr. Frohawk exhibited a bred series of *Melitæa cinxia*, L., set to show the variation on the under side; one specimen had large oblong blotches in the light median band. Mr. Hall, a very variable series of *Melanippe hastata*, L., from Sheffield, Scotland, and the Hebrides, some specimens showing the median white band almost obliterated. Mr. Carpenter, a bleached var. of *Epinephela ianira*, L., from the New Forest, being the only insect captured worth recording during a fortnight's hard work; he stated sugar was an absolute failure. Mr. Robson, a series of *Macroglossa bombylifformis*, Och., taken on May 15th in the New Forest. A discussion ensued as to the presence of scales on the wings at emergence. Mr. R. Adkin, a series of *Coccyx strobilella*, L., together with the spruce-cones from which they had been reared, and read notes on the economy of the species. A discussion ensued. Mr. Auld, a bred series of *Calymnia affinis*, L., from Chattennden, and also a series of *Ephippiphora fenella*, L., bred from mugwort roots, which were shown with pupa-cases *in situ*. Mr. Adkin read a communication from Mr. South, stating that the dipterous larvæ exhibited some months ago in the stems of *Arundo phragmites* had been found referable to *Lipara lucens*. Several members remarked upon the abundance of *Acidalia virgularia*, Hb. (*incanaria*, Hb.), and the scarcity of *Spilosoma menthastri*, Esp., *S. lubricipeda*, Esp., and *Euplexia lucipara*, L., while last year the reverse occurred.

*August 9th.*—The President in the chair. Mr. A. W. Peach, of Chiswick, was elected a member. Mr. Hall exhibited bred series of *Xanthia fulvago*, L. (*cerago*, Fb.), from Derby and Croydon, stating that it was usual to obtain more in proportion of var. *flavescens*, Esp., from the north than from the south; also bred series of *X. citrigo*, L. Mr. West, of Streatham, two males and two females of *Lasiocampa quercifolia*, L., bred from larvæ obtained in the fen district. Mr. Adkin, on behalf of Mr. South, bred series of *Hypsipetes sordidata*, Fb. (*elutata*, Hb.), from Northwood, having very dark ground colour; bred series of *Cleoceris viminalis*, Fb., from Batchworth, some being melanic, while others were very pale; a few *Tortrix xylosteana*, L., of which one had jet-black markings instead of rich reddish brown; a long series of *Scoparia murana*, Curt., from Macclesfield; a series of *Prays curtisellus*, Don., comprising the normal and the uniformly fuscous form, collected round Macclesfield; and an exceptionally strongly marked female of *Hepialus humuli*, L., taken at Elstree. Mr. Croker, a long and fine series of *Leptogramma hastiana*, L., bred from St. Anne's-on-Sea; and two exceptionally distinct specimens of *L. literana*, L., from the New Forest. Mr. Adkin, a few specimens of *Spilosoma mendica*, Clerk., bred from Hartlepool; and three specimens of *Hylophila bicolorana*, Fues. (*quercana*, Schiff.), bred from New Forest larvæ, with the cocoons, upon the mechanical structure of which he made some remarks. Mr. Williams, a curiously scorched specimen of *Uropteryx sambucata*, Dup., from Highgate. Mr. Turner, a dark specimen of *Melanippe fluctuata*, L., referable to var. *neapolisata*, Mill., taken at Brockley.—Hy. J. TURNER, *Hon. Report Sec.*

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## A VARIETY OF *VANESSA CARDUI*.



THE fine aberration of *V. cardui* figured above differs very considerably from typical specimens of the species in the extent of markings on both surfaces of the wings, especially so on the secondaries. On the upper surface of the primaries the median band is almost obliterated, the black on the hind margin is paler and broader, extending further into the median interspaces, the apical markings are typical in form, but the black is reduced in depth, and the white spots are subdued, inclining to pinkish buff. The secondaries have the two submarginal rows of spots confluent, forming a series of conspicuous elongated marks, with the inner half of each centred with grey; the central portion of the wing is without markings; the ground colouring of both wings is normal. On the under surface the whole of the central and basal area of the primaries is without any trace of the usual markings, and the pattern of the secondaries is much modified and generally more suffused, and exhibiting an unusual amount of white over the basal half.

The specimen figured was captured on August 18th, 1892, at Hilmarton, N. Wilts, by the Rev. J. E. Tarbat, by whom it has been kindly lent me for figuring.

An aberration of *V. cardui*, somewhat similar to the above, is figured in the 'Entomologist,' vol. vi. p. 345.

F. W. FROHAWK.



*CHARÆAS GRAMINIS* IN SOUTHERN SCOTLAND.

BY ROBERT SERVICE.

UNDER the expressive designation of "hill-grubs," the shepherds of the southern uplands of Scotland have been familiar for generations past with the larvæ of the antler moth as a most destructive pest, inferior in grass-eating powers only to those of rabbits, and, at rare intervals, to those of the short-tailed field vole. The details of the recent sudden outbreak of the last-named small rodents over the northern parts of the Border counties, and that so rapidly assumed the dimensions of a plague, rendering necessary a Government Commission of Inquiry, are quite familiar to naturalists. The only reason for mentioning the vole plague of 1891, 1892, 1893 here is to point out that it existed on practically the whole of the sheep-farm country that extends from Roxburghshire, along Tweedside, and the fine ranges of hills where the sources of the Esk, Annan, Nith, Urr, Dee, and Cree are found,—an old and historic land, full of the memories of Border raids and forays, and of the later Covenanting strife. And now the rolling green hills of Dumfriesshire, and the more rugged, and more heathery, steeper and more sterile, hills of Galloway are almost wholly given up to sheep and grouse, instead of being strongholds of the ancient fighting stock, which "made" so much history on both sides of the Debateable Land. Little more than a year has elapsed since the sheep-farmers congratulated themselves on having finally got rid of the voles that caused so much alarm and loss. During this spring and summer complaints have been many and deep of the widespread damage done by the "hill-grubs." So far as I can see and hear in the course of long rambles through the affected districts, the "hill-grubs," while present almost everywhere to the eyes of a close observer, have appeared to a really destructive extent only in somewhat isolated farms and patches. There is a badly affected area at the head of Eskdalemuir, and a second centre of destructive outbreak not far from Elvanfoot Station, on the Caledonian Railway, where the farms of Glengeith and Glenochter are specially badly infested. The lands around Leadhills and Wanlockhead—the highest-lying villages in Britain—have been sadly depreciated this season, owing to the ravages of these caterpillars. It was reported in the local newspaper, the 'Dumfries Courier,' that a travelling grocer, in going along the road between these two villages on June 22nd, drove over so many grubs that his cart-wheels were quite clogged and wet with the juice of their bodies. Passing over the country that lies between Queensberry and the head of the Glenkens, we come to a fourth affected area, on and around the head-waters of the Ken. The lands that inter-

vene and connect these four different areas hold in the meantime a very much larger stock of *C. graminis* than is normally present, and if the present conditions of vigorous and progressive vitality continue over till another season, there is every reason to anticipate a plague of caterpillars as widespread and probably as destructive as the voles so lately were.

As I have already stated, the "hill-grubs" have been familiar to many generations of shepherds, and I have often been told by old men of outbreaks in different parts of the district that happened long ago. And for the most part these outbreaks appear to have been confined to certain localities or farms, and were but rarely general over a wider district in any particular year or years. The years from 1830 to 1836 were, however, remarkable for plagues of the "hill-grub." In these successive seasons the larvæ in question seem to have been spread over most of the southern uplands to a very destructive extent, and only recently I was speaking to an old herd who had seen the sheep-drains "chokeful," so that the water was dammed back by the masses of larvæ swept in by sudden thunder-showers. The same thing happened this summer, when, after the great thunderstorm on the evening of July 6th last, the drains and ditches on Polgowan farm, at the head of the Scaur water in Penpont parish, were found in many places to have been filled up by the grubs that had been washed in by the extraordinary heavy rainfall. Mr. Robert Martin, the tenant of the farm in question, informed me that in several of the hollows of the drains the larvæ were lying to a depth that was measured at 24 inches. Six to twelve inches deep of caterpillars was quite a common feature of this curious phenomenon. On June 18th a party of anglers fishing down the Ken from the Holm of Dalquhairn to a little past Craigengillan, a distance of several miles, found every trout they captured literally crammed to the mouth with "hill-grubs." Rooks are, as is well known, the great bird enemy of these caterpillars, and since the young broods were strong enough to accompany their parents to the hills, very large flocks of these birds have been in daily attendance on the grub-infected patches on many hillsides. The black-headed gulls (*Larus ridibundus*) and the common gulls (*L. canus*) are also very fond of these larvæ. Curlews take a good many, golden plovers and lapwings pick them up in numbers, and there is a little bird, the snow bunting, which one could hardly suspect of consuming these larvæ; yet nevertheless, in a lot of eight snow buntings shot in January some years ago on Crawfordmuir, I found an average of eight or nine undigested skins of *C. graminis* in each of their stomachs. Similarly in some other snow buntings, shot on a Galloway hill in midwinter, I found larvæ of *Noctua xanthographa*, showing, I think, that this bird does not always live on



grass-seeds, as is so often stated. Whether any insect parasites limit the numbers of the "hill-grub," I am quite unaware, but I know that *Ichneumon latrator*, F., is often very abundant in places infested by *C. graminis*.

There seems to be an idea that the larvæ of *C. graminis* are unusually late this year, but I hardly think there is any ground for this belief. Until the notion was suggested by a correspondent, my belief was that the larvæ of *C. graminis* were really somewhat earlier than usual. Since early in June I have constantly seen these larvæ both at large amongst the herbage, and in numerous lots in boxes gathered and sent, or brought, to me for identification. In all cases there were larvæ in all stages, from quite small ones that had, so to speak, just emerged from the hybernating stage, right up to the large, sleek, and shining, fellows hard and wiry to the touch, that seemed about to undergo the perils of pupation. During the morning hours they seem to me to lie quiet, hidden low down amongst the culms of grass. By 10 or 11 o'clock they get on the move, and in places where they are abundant the sound they make in crawling through, amongst and over the grass-stems, some moving about, others munching their food, is very distinctly audible. To the eye the whole of the herbage seems in motion. This movement amongst the larvæ continues till late in the afternoon, when it quietens down to a very great extent. A friend of mine, who, towards the end of June, was walking along a moorland road in Carsphairn early in the afternoon, feeling a little fatigued, sat down for a rest against an overhanging bank that bounded the roadway. He had no sooner sat down than he became aware of a seething mass of caterpillars at the bottom of the bank, that was continually being added to by a constant dropping of individuals from the overhanging bank above. To confirm his observation my friend brought me a box containing several hundreds of these larvæ.

When at large the larvæ like best to feed on that portion of the grass-stems that grows at the level of the ground. The voles fed very much on the same part of the grass. And in both instances the stems and general masses, becoming thus detached, got blown away in bunches and swathes of brown withered hay, giving the knolls and hillsides a bare and desolate appearance that can be detected at a great distance away. The species of grass and other plants that are most affected are deer's hair (*Scirpus cæspitosus*), spret (*Juncus articulatus*), bent grass (*Agrostis vulgaris*), blaw grass (*Molinia cærulea*), wire bent grass (*Nardus stricta*), hair grass (*Aira cæspitosa*), rough-stalked meadow grass (*Poa trivialis*), midge grass (*Holcus lanatus*), cotton grass (*Eriophorum vaginatum*), stool bent (*Juncus squarrosus*). Although I give these as the kinds of grass usually eaten, I question very much whether the larvæ have really any marked preferences, for

wherever the bare patches of grub-infested pasture are seen, it will be found that *all* the grasses have gone quite indiscriminately. I have not been so fortunate as to see the morning flight described by Mr. Wailes, and so often quoted in connection with this species. On the evening of the last day of September, 1893, I happened to be coming down with a companion from the wild mountains around Loch Dungeon, where I had spent a very pleasant day. The evening was mild and very moist—what we call “mochy” hereabouts—and just as we got on to the level ground at the outside of a moss of perhaps six acres in extent, we found antler moths flying in countless myriads in every direction. The time was 6.40, and there was still enough of the gloaming left to see the moths quite distinctly on every side of us, flying just below the level of the grass-seed heads. How long this flight had already lasted we had no means of knowing, and as we had many miles of the roughest knowes and bogs still to traverse before we would reach our destination for the night, we tarried only long enough to capture a few specimens for the sake of date and locality. Some years ago, when I was in the habit of going to a railway signal-box in this neighbourhood, where I had secured special permission to capture insects at the lamps, I used to find *C. graminis* very commonly, but it never came into the lighted cabin until after 11 o'clock. The time used to be distinctly noted from the fact that there appeared, on favourable nights, to be always a rush of moths immediately after the passage of an express train that passed the cabin at 11.5. During the autumn months this species is very frequently found during the daytime on thistle and ragweed flowers. On the moorlands the larvæ seem to have a liking for pupating under stones. Small stones, not much bigger than the outspread hand, and lying partly buried in the soil, will, in favourable spots, be found to have one or more pupæ underneath. I have frequently gathered the pupæ in such places.

In confinement the larvæ of *C. graminis* have (with me, at any rate) thriven very badly, and scarcely five per cent. have got to the pupal stage. Several of my friends have the same complaint to make. The caterpillars reach the last moult and die off, their bodies being then in an almost fluid condition. I have tried them in several ways, even going to the trouble of bringing some sods of the moor grasses, but with no better success.

There is a tolerably frequent remark that these larvæ “follow the voles.” It is of course well known that after the vole plague suddenly ceased the pasture sprung up again in the most luxuriant manner. The tussocks of coarse perennial grasses, the rushes and sedges, had all disappeared, and the new grass was young and green, and of the freshest description. Whether the “hill-grubs” were thus furnished with suitable pabulum on



which to increase and multiply and devour the earth, is a question worth discussing, and that some observers think might be answered in the affirmative. So far as my humble opinion is worth anything, I incline to the belief that the respective outbreaks of the voles and the "hill-grubs" have no connection other than in some little-understood climatic conditions.

Maxwelltown, Dumfries, July 17th, 1894.

PS.—On August 23rd I happened to be going across the farm of Townhead, in Closeburn parish, Dumfriesshire, with some friends, who, like myself, were at the time occupied in some archæological researches. I had been on the moor perhaps half an hour or so, without any particular thought of Entomology, when all at once, about 10.10 a.m., the antler moths appeared in myriads. Thousands upon thousands of them were flying in all directions, most of them just amongst and over the flowering heads of the spret (*Juncus articulatus*); but many were flying higher in the air, and some mounted up out of sight. It was a wonderful scene, and one that I would not have cared to miss. The effect was altogether different to that presented by the evening flight I saw near Loch Dungeon, described above. On that occasion the range of vision was circumscribed to a circle of a few yards by the gathering gloom of a dull autumn night, and the moths might not have been noticed at all by those unaccustomed to observation. But the sight of such vast numbers of moths in broad sunlight was something entirely novel, and so unexpected that I could not help gazing on it in wonder and amazement. The thickest of the flight was over places where the spret grew almost to the exclusion of everything else. About 12 o'clock the moths became much fewer, but during the whole afternoon there were more or less always to be seen flying about. Near 7 o'clock in the evening, when I left the hillside, they were again becoming more plentiful. A somewhat remarkable thing is that the "hill-grubs" were not noticed to a destructive extent on this farm.

September 8th.

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## THE NORTH AMERICAN NOCTUIDÆ OF THE GENUS *INGURA*.

By A. G. BUTLER, Ph.D.

HAVING recently had occasion to examine the species of *Ingura*, and wishing to see whether Prof. Smith had included in his synonymy an insect of that genus described by Walker under the genus *Subrita*, I was convinced that this author could not have examined the drawers of our arranged collection containing *Ingura*; inasmuch as, not only his synonymy, but his remarks

respecting at least one species (in that drawer) of which we possess the type, clearly prove that the genus, as arranged by me, cannot have been even glanced at.

The genus *Ingura* has been arranged in the Museum collection for quite a considerable time, for it is one of the groups which years ago I referred to the Notodontidæ, only discovering my error when engaged upon the arrangement of the Noctuidæ, to which group I immediately transferred it.\*

I have nothing to add to Prof. Smith's notes respecting *I. declinata*, Grote, *I. delineata*, Abbot, and *I. abrostoloides*, Guenée. If I have seen Abbot's drawing, it is evident that I have failed to identify the species.

#### *I. FUSCESCENS*, Walk.

This is not a North American species; the type was from Honduras, and is a very slight variety, scarcely worth noting, of *I. lunodes*. It is very distinct indeed from

#### *I. ABROSTOLELLA*, Walk.

Incorrectly spelt *I. abrostella* (sic) by Prof. Smith. It would be a pity if we had to adopt the name in a genus which already contains a species named *I. abrostoloides*. Fortunately this will, I feel certain, be unnecessary. Respecting *I. flabella*, Grote, and *I. oculatrix*, Guen., I have nothing to add to Prof. Smith's remarks.

#### *I. PYGMÆA*, Hübn.

I have no doubt that this is a bad representation of *I. abrostolella*, the synonymy of which therefore will be as follows:—

#### *Ingura pygmæa*.

*Pætes pygmæa*, Hübner, Exot. Schmett. Zutr. 21, figs. 109, 110 (1818).

*Subrita? abrostolella*, Walker, Lep. Het. xxxv. p. 1744 (1866).

*Ingura præpilata*, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 311 (1875).

#### *I. CRISTATRIX*, Gn.

This is a truly Indian species, the type of which, from Horsfield's Java collection, is in the Museum. Its range extends into Southern India on the one hand, and to the Friendly Islands on the other. It differs from all the American species subgenerically, the basal portion of the antennæ being strongly and widely pectinated, the pectinations not appressed to the shaft, but expanded freely. There are four examples of this well-marked species in our drawer of *Ingura*, and it is so conspicuous an insect that no man looking into the drawer could

\* I am not positive that this genus stood among the Noctuidæ when Prof. Smith went through them; but it was arranged, and all the species labelled.



fail to be struck with it. I would propose for this form the sub-generic name of *Callingura*. To some men it will be a genus; but as it is only distinguishable by secondary sexual characters of the male, it ought to take a lower rank than a group in which distinctive structural characters occur in both sexes. Mr. Hampson regards *I. cristatrix* merely as section B. of *Ingura*, and therefore does not name it. I think names for these sub-genera or sections are a great convenience.

I offer these notes, not as a criticism of Prof. Smith's work, but merely as a contribution towards a correct knowledge of North American Lepidoptera. I trust, therefore, that this author, who has done more good work in the group than any of his predecessors, will accept the corrections in the same scientific spirit which prompts me to publish them.

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### SOME INMATES OF A DECAYED CHERRY-TREE.

By C. J. WATKINS.

TWENTY years ago, on this tree in our garden here, at the bottom of a Coteswold valley, I used to hang saccharine snares to attract the sweet-loving Lepidoptera. Some time after it was struck by lightning, and soon showed signs of decay. The limbs broke off in the severe gales which occasionally visit us, and for several years the old stump, some 7 ft. high and 10 in. diameter at its base, supported a metal clothes'-line. For the past three years signs of internal feeders have increased in the quantity of woody *débris* ejected from some holes in the bark, and, falling on a bed of marjoram growing round the base of the stump, formed a striking contrast to the colour of the herb. Several times I had watched the holes, hoping to see some inhabitant passing in or out, but without success, till Oct. 23rd, 1892, when at midday, in the sun, a *Pemphredon* appeared and entered one of the burrows. Never having examined the nidus of a fossore, I greatly desired to have the stump removed indoors for careful examination during the winter, but business and ill-health prevented this project being carried out. During March, 1893, the top portion broke off in a high wind, and disclosed such an assemblage of burrows and galleries occupied by insects in various stages of their economy, that I had the old stump cut down, and, after sawing it into suitable blocks, divided each block into portions, placing them in large glass-topped cases, while special pieces were kept in smaller boxes. The careful cutting up of the stump occupied several hours per day for over a week, but the varied forms of the inmates found, and afterwards bred, was ample reward for the time and pains spent in such interesting observations; and I only regret that more time

could not be given to the solution of further points in the life-histories of certain species, of which I could find no reliable account in the literature I possess.

For the kind identification of doubtful species I am indebted to the following authorities, whose valued aid enabled me to draw up the appended list:—Mr. Edward Saunders kindly examined the Hymenoptera-Aculeata; Mr. T. R. Billups, the Parasitic Hymenoptera, &c.; Dr. Meade, the Diptera; Mr. H. C. A. Vine, the Aphididæ.

The list is not exhaustive, and several additions to the fauna of our stump could have been made had time permitted the examination of observed examples of Crustaceans, Myriapods, and Arachnoidea.

*List of Insects found in an old Cherry-stump during April, May, and June, 1893.*

COLEOPTERA.

CARABIDÆ.—*Calathus cisteloides*, Illiger. One specimen found dead in a burrow.

LUCANIDÆ.—*Sinodendron cylindricum*, Linné. One specimen found dead in a burrow.

CISSIDÆ.—*Cis boleti*, Scopoli. Twelve specimens alive in the cherry-bark.—*C. hispidus*, Paykull. Two specimens alive in the cherry-bark.—*C. nitidus*, Herbst. One specimen alive in the cherry-bark.

MELANDRYIDÆ.—*Melandrya caraboides*, Linné. Thirty-three bred from larvæ, April and May.

MORDELLIDÆ.—*Anaspis frontalis*, Linné; *A. fasciata*, Forster. One of each alive in cherry-bark.

ORTHOPTERA.

FORFICULIDÆ.—*Forficula auricularia*, Linné. One dead in a fossorial burrow and in a cell, in which it just fitted, and remains of others in other burrows.

HYMENOPTERA.

TENTHREDINIDÆ.—*Emphytus perla*, Klug. One female, April 26th, from borings.

CYNIPIDÆ.—*Synergus facialis*, Dalman. One female, May 15th, from borings.

CHRYSIDIDÆ.—*Omalus auratus*, Dahlbom. Nine, May and June, bred from burrows of *Pemphredon*.

ICHNEUMONIDÆ.—*Phygadeuon gravipes*, Gravenhorst. Two females, June, from burrows of *Crabro leucostomus*.—*Perithous varius*, Gravenhorst. One male and two females, May, from burrows of *Pemphredon*.

CHALCIDIDÆ.—*Pteromalus apum*, Westwood. Fifty specimens, May and June, from burrows of *Crabro*.

FOSSORES-POMPIDÆ.—*Pompilus spissus*, Schiodte. One female, May 31st, found near burrows of *M. caraboides*.

FOSSORES-PEMPHREDONIDÆ.—*Pemphredon lugubris*, Latreille. Eighty, both sexes, April and May.—*P. shuckardi*, Moraw. Four, in April and May.



FOSSORES-CRABRONIDÆ.—*Crabro leucostomus*, Linné. Seven males only from forty pupæ in May.—*C. cephalotes*, Panzer. Ten males and four females, May and June.—*C. chrysostomus*, Lep. Sixty-four males and twelve females, May and June.—*C. vagus*, Linné. Thirteen, chiefly males, June.

ANTHOPHILA-APIDÆ.—*Anthophora furcata*, Panzer. One female out in May from burrows of *Crabro vagus*.

#### LEPIDOPTERA.

TINEÆ.—A Micro moth emerged end of May from pupa found on the cherry-bark, and not yet identified.

#### HEMIPTERA.

HOMOPTERA-APHIDIDÆ.—*Siphonophora (rosæ?)*, *S. (pisi?)*. Numerous in "larders" of *Pemphredon*.

#### DIPTERA.

MYCETOPHILIDÆ.—*Sciara nitidicollis*, Meigen; *S. nervosa*, Meigen; *S. (pulicaria)*, Meigen?; *S. (præcox)*, Meigen?. Imagines began to appear on April 27th, and continued coming out of the burrows up to June, when about forty had emerged. Two larvæ of *S. præcox* I found, on April 15th, in an untouched "larder" of *Crabro*, feeding on a mouldy *Rhingia rostrata*; these turned to curious horned pupæ end of April, and one imago emerged end of May. Probably all these *Sciara* feed in the larval state on the Diptera in the "larders" of *Crabro*.—*Eæchia* (sp.?). One specimen in June from borings.

CHIRONOMIDÆ.—*Ceratopogon* (sp.?). Several, both sexes; pupæ seen April 2nd, imagines June 9th, &c.

PSYCHODIDÆ.—*Trichomyia (urbica)*, Haliday?. Two specimens end of May.

TACHINIDÆ.—*Brachycoma erratica*, Meigen. New British species; bred male and female in May from borings of *Pemphredon*. Described by Dr. Meade in Ent. Mo. Mag., May, 1894, p. 110.

ANTHOMYIDÆ.—*Hyetodesia errans*, Fallen. One female, May 13th, from fossorial borings.—*Hylemyia festiva*, Zetterstedt. Rare; bred both sexes. Sixteen from borings of *Pemphredon*; out from April 26th to May 13th. Described by Dr. Meade in Ent. Mo. Mag., October, 1893, p. 285. The above specimens are recorded in same Mag. of December, 1893.

SAPROMYZIDÆ.—*Lonchæa vaginalis*, Fallen. Three females, April and May, from borings of *Pemphredon*.

The following Diptera I identified among the stored prey in partially consumed and in untouched "larders" of the four species of *Crabro*. Numerous stores still remain to be examined.

STRATIOMYIDÆ.—*Microchrysa polita*, Linné. Both sexes in nidus of *Crabro leucostomus*.

SYRPHIDÆ.—*Melanostoma (mellinum?)*. In nidus of *Crabro leucostomus*.—*Pyrophæna ocymi*, F. Females in nidus of *Crabro* (sp.?).—*Platychirus albimanus*, F. In nidus of *Crabro* (sp.?).—*P. fulviventris*, Meq. Eight in one "larder" of *Crabro chrysostomus*.—*P. clypeatus*, Mg. Several in nidus of *Crabro* (sp.?).—*Syrphus balteatus*, Deg. (one female); *S. ribesii*, Linné (two females). In one "larder" of *Crabro*

*cephalotes*.—*Rhingia rostrata*, Linné. Three specimens in one “larder” of *Crabro cephalotes*.

MUSCIDÆ.—*Pollenia* (sp. ?). In nidus of a *Crabro*.—*Musca corvina*, F. (two females); *Stomoxys calcitrans*, Linné (one female). In one “larder” (*C. vagus* ?).

*Summary of Insects found in the Cherry-stump.*

Order.	Families.	Genera.	Species.	No. of Specimens.
Coleoptera .....	5	5	8	52
Orthoptera .....	1	1	1	1
Hymenoptera .....	9	10	14	258
Lepidoptera .....	1	1	1	1
Hemiptera .....	1	1	2	12
Diptera .....	9	17	23	90
Total .....	26	35	49	414

King's Mill House, Painswick, Gloucestershire.

## LIFE-HISTORY OF VANESSA C-ALBUM.

By F. W. FROHAWK, F.E.S.

(Concluded from p. 262.)

THE pupa :—Average length,  $\frac{5}{8}$  in. Dorsal view: the head is square; the palpi-cases are widely separated, sharply pointed, curving inwards, and are very jaw-like in form; the thorax is biangular at the base of the wing, much nipped-in round the middle, giving a deep concavity to the wing, which is acutely angulated on the hind margin; the abdomen is attenuated, and the anal point elongated. Lateral view: the head is beaked in front; the thorax much swollen, with a central deep rounded keel, and is deeply sunken at the juncture of the abdomen; the dorsal line of the abdomen is curved, the posterior segment is truncated, and the anal point flattened and elongated, measuring  $\frac{1}{2}$  in.; the outline of the lateral surface from near the apex of the antenna to the head is almost straight, the antenna incurving at the apex; the abdomen has a medio-dorsal series of very small ochreous yellow points, one on each segment, and smaller black points forming super- and sub-spiracular rows; the sub-dorsal series consists of larger points, especially on the 4th segment, which are large, conical, and sharply pointed; those on the 1st, 2nd and 3rd segments are of brilliant metallic appearance, resembling highly burnished silver, with opaline irradiance; the first pair are the largest and most compressed; a streak of brilliant coppery gold ornaments the anterior portion of the 3rd and 4th segments, running from the edge of the segment to the silver point; the ground colour of normal specimens is a pinkish buff, very delicately reticulated with black, two broad oblique



dark olive-green bands cross the wing, one at the apex and the other across the middle; three bands of similar colour extend down the abdomen, one on each side, enclosing the black spiracles, the other is central along the under surface; the dorsal area of the abdomen is blotched with olive, and has a medio-dorsal line of pale pink; the thorax is streaked with deep pink; the palpi are black; on the hind legs is an olive streak shading into black, and terminating in a black point at the end of the tibia; there is also a smaller black point on the fore leg; the anal point is buff, streaked longitudinally with black, and is amply provided with shining brown hooks at the extremity. The outline of the hind margin of the wing-case is most dissimilar and disconnected to that of the true wing, which has the deep angular margin clearly defined in the pupa, which in the former is a simple curve. Some specimens are more uniform in colour, having the markings much less defined, especially on the wing, and are generally somewhat metallic, as if lightly washed over with gold-bronze, and in some the ground colour is a deep pink. The pupa is suspended by the anal hooks to a small dense silken pad spun by the larva, generally upon the under side of the stalk or midrib of the leaf, and also upon the stems of the plant. It remains in the pupal state from ten to fifteen days, but the time is entirely regulated by temperature.

The imago emerged (from the pupa described) on July 2nd, remaining eleven days in the pupa.

The descriptions are all taken from the same individual, from directly after the hatching of the egg to the emergence of the imago.

The entire brood were kept under similar conditions, corresponding as closely as possible to the outdoor temperature, purposely to avoid as much as possible any artificial rearing.

Cold, dull weather principally prevailed during all their stages. The ova and young larvæ were subjected to a temperature which fell as low as  $41^{\circ}$  during the night of May 21st, when several ova were hatched, and I found others hatching the next morning, the temperature then being only  $50^{\circ}$ ; therefore the ova will hatch in a temperature between  $40^{\circ}$  and  $50^{\circ}$ , or rather a little above  $40^{\circ}$ , as apparently some had hatched during the early hours of the morning.

Immediately after the hatching of several ova, I placed the larvæ on different plants, and kept each plant isolated from the rest, so that the larvæ fed solely upon the same food through all the stages; the plants selected were red-currant, black-currant, gooseberry, elm, hop, and nettle; I found all six plants to be equally suitable as food for the larvæ. The majority were fed exclusively upon stinging-nettle. From this one brood I have a long series, numbering 200 fine specimens, consisting of 105 males and 95 females, making a fairly equal proportion of sexes;

41 are of the light fulvous form (27 males and 14 females), and 159 of the dark form (78 males and 81 females). The first imago emerged on June 30th, a male of the light form; the last emerged August 2nd, a male of the dark form.

As regards the two forms of this butterfly, I am able to confirm Mr. Harcourt Bath's remarks (Entom. 242), "that the dark form is the type of the first brood." Such is undoubtedly the case, as will be seen from the above, that out of the 200 specimens 159 are of the dark form, the remaining 41 being of the pale fulvous form, the proportion being about one to five. With few exceptions, the light forms were the first to emerge, the majority of them emerging during the first few days of July, and before any of the dark forms made their appearance.

It seems remarkable that two such very different forms occurring in both sexes should be the offspring of the same parent, and the light form to be the first to emerge. The pale or fulvous form is generally larger (my largest female measuring  $2\frac{1}{2}$  in. in expanse, and is palest in colour), and always very much less angulated in outline.

Balham, S.W., August, 1894.

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## THE COPROPHAGOUS LAMELLICORNS; A REVISED LIST OF SPECIES BELONGING TO THE GENERA *PACHYLOMERUS*, KIRBY, AND *ATEUCHUS*, WEBER.

BY JOHN W. SHIPP.

Assistant in the Hope Dept., Oxford University Museum.

(Continued from p. 257.)

THE following is a list of the species belonging to the genus appearing in the Ethiopian Region. Gemminger and Harold, Cat. Col. iv. 1869, catalogues 43 species. This has been further augmented to 72.

### ETHIOPIAN REGION.

1. *egyptiorum*, Latr., Voy. Cailliaud, iv. p. 279, t. 58, f. 10 (1827); Guérin, Icon. Regne Anim. Ins. t. 21, f. i.  
var. *purpurascens*, Gerstaecker, Arch. f. Nat. xxxvii. p. 48.
- 1.—Sennaar; Zanzibar. In Mus. Oxon.
2. *eruginosus*, Klug, Monatsber. Berl. Acad. p. 650 (1855); Peters. Reis. p. 212 (1862).  
*metallicus*, Boheman, Ins. Caffr. ii. p. 164 (1857).  
*cupreus*, Casteln., Hist. Nat. ii. p. 65 (1840).  
*rutilans*, Klug MS.
- 1, 3.—Caffraria; Cape Town; Natal; Mozambique; Limpopo; Tette. In Mus. Oxon.



3. *ambiguus*, Boheman, Ins. Caffr. ii. p. 173 (1857).  
*sparsus*, Germar MS.  
 3.—Caffraria ; Natal ; Cape Colony.
4. *bohemani*, Harold, Col. Hefte iv. p. 104 (1868).  
*cicatricosus*, Boheman, Ins. Caffr. ii. p. 177.  
 1.—Caffraria.
5. *bonelli*, McLeay, Horæ Ent. i. 2, p. 498.  
*hottentotus*, Dej., Cat. 3rd ed. p. 150.  
 3.—Cape Colony.
6. *caffer*, Boheman, Ins. Caffr. ii. p. 169 (1857).  
 3.—Caffraria.
7. *clericus*, Boheman, Ins. Caffr. ii. p. 167 (1857).  
 3.—Caffraria.
8. *convexus*, Hausm., Illiger's Mag. vi. p. 249 (1807) ; ("Wiedeman" in Coll. Hope).  
*lævis*, Thunb., Mem. Ac. Petr. vi. p. 408 (1818).  
 3.—Cape Town. In Mus. Oxon.
9. *cornifrons*, Casteln., Hist. Nat. ii. p. 64 (1840).  
*compressicornis*, Klug, Symbolæ. Phys. v. t. 41, f. 1.  
*impressicornis*, Reiche, Dej. Cat. 3rd ed. p. 150.  
 1.—Arabia ; Nubia ; Lower Egypt ; Senegal R. In Mus. Oxon.
10. *costatus*, Wiedeman, Zool. Mag. ii. i. p. 21.  
 3.—Cape of Good Hope.
11. *cupreus*, Boheman, Ins. Caffr. ii. p. 163 (1857).  
 3.—Limpopo R.
12. *cuvieri*, McLeay, Horæ Ent. i. 2, p. 499 ; Casteln. Hist. Nat. ii. p. 65 (1840).  
*senegalensis*, Dej., Cat. 3rd ed. p. 150.  
*lamarki*, Klug MS.  
 1.—Senegal R. In Mus. Oxon.
13. *ebenus*, Klug, Monatsber Berl. Acad. p. 650 (1855) ; Peters, Reis. p. 214 (1862).  
 1.—Mozambique.
14. *festivus*, Harold, Col. Hefte iv. p. 79 (1868).  
 2.—R. Niger.
15. *flavicornis*, Boheman, Ofvers. Vet. Ac. Förh. p. 107 (1860).  
 1.—Svacop.
16. *fritschi*, Harold, Col. Hefte iii. p. 86 (1868).  
 1.—Orange Free State ; S. Africa.
17. *funbris*, Boheman, Ins. Caffr. ii. p. 176.  
 3.—Caffraria.
18. *furcatus*, Casteln., Hist. Nat. ii. p. 66 (1840).  
*morio*, Dej., Cat. 3rd ed. p. 150.  
 1.—Senegal R.

19. *galenus*, Westwood, Trans. Ent. Soc. iv. (1847), p. 226, pl. 17, f. 1; Lacordaire, Gen. des Coleop. Atlas, pl. 25, f. 5.  
*cephalotes*, Dej., Cat. 3rd ed. p. 150.  
*paradoxus*, Boheman, Ins. Caffr. ii. p. 170 (1857).  
 3.—Cape of Good Hope; Cape Colony; Limpopo R. In Mus. Oxon.
20. *goryi*, Casteln., Hist. Nat. ii. p. 64 (1840).  
*indicus*, Dej., Cat. 3rd ed. p. 150.  
 1.—Senegal R. In Mus. Oxon.
21. *jalofti*, Casteln., Hist. Nat. ii. p. 64.  
*galamensis*, Reiche MS. (in Hope Coll.).  
 1.—Senegal R. In Mus. Oxon.
22. *interstitialis*, Boheman, Ins. Caffr. ii. p. 171 (1857).  
 3.—Caffraria.
23. *intricatus*, Fabr., Syst. El. i. p. 56; McLeay, Horæ Ent. i. 2, p. 499; Casteln. Hist. Nat. ii. p. 66 (1840).  
*palemo*, Oliv., Ent. i. 3, p. 187, t. 27, f. 234; McLeay, Horæ Ent. i. 2, p. 56.  
 3.—Cape Town; Cape Colony; Caffraria. In Mus. Oxon.
24. *isidis*, Casteln., Hist. Nat. ii. p. 64 (1840).  
*religiosus*, Dej., Cat. 3rd ed. p. 150.  
*lophocnemus*, Kollar MS.  
 1.—Palæarctic subregion. 2.—Nubia; Upper Egypt; Senaar; Persia. In Mus. Oxon.
25. *lamarki*, McLeay, Horæ Ent. i. 2, p. 499.  
*guineensis*, Dej., Cat. 3rd ed. p. 150.  
 var. *infernalis*, Klug, Monatsber. Berl. Acad. p. 650 (1855); Peters, Reis. p. 213 (1862); Boh. Ins. Caffr. ii. p. 168 (1857).  
 1, 2.—Senegal R.; Nubia; Guinea; Mozambique. In Mus. Oxon.
26. *lucidulus*, Boh., Ofvers. Vet. Ac. Förh. 1860, p. 107.  
 1.—N'Gami.
27. *morbillosus*, Fabr., Ent. Syst. i. p. 63; Syst. El. i. p. 56.  
 2.—Guinea; Gambia. In Mus. Oxon.
28. *modestus*, Boh., Ins. Caffr. ii. p. 165 (1857).  
 3.—Caffraria. Matabili-land.
29. *nigroæneus*, Boh., Ins. Caffr. ii. p. 165 (1857).  
 1.—N'Gami.
30. *parvulus*, Boh., Ofvers. Vet. Ac. Förh. 1860, p. 108.  
 3.—Svacop.
31. *proboscideus*, Guérin, Icon. Regne Anim. Ins. p. 73; Reiche, Dej. Cat. 3rd ed. p. 150.  
 1.—Senegal R. In Mus. Oxon.
32. *prodigiosus*, Erichs., Wieg. Archiv. i. p. 231 (1843).  
 1?—Trop. Africa.



33. *profanus*, Boh., Ins. Caffr. ii. p. 162 (1857).  
1.—Caffraria.
34. *rubripennis*, Boh., Ofvers. Vet. Ac. Förh. 1860, p. 107.  
1.—N'Gami.
35. *rugosus*, Hausm., Ill. Mag. vi. 1807, p. 270.  
*convalescens*, Wiedm., Zool. Mag. ii. p. 21 (1823).  
3.—Cape of Good Hope. In Mus. Oxon.
36. *rusticus*, Boh., Ins. Caffr. ii. p. 175 (1857).  
3.—Caffraria.
37. *satyrus*, Boh., Ofvers. Vet. Ac. Förh. 1860, p. 107.  
3?—Svacop.
38. *savignyi*, McLeay, Horæ Ent. i. 2, p. 503 (1821).  
*operosus*, Dej., Cat. 3rd ed. p. 150.  
*transversus*, Casteln., Hist. Nat. ii. p. 65 (1840).  
3.—Cape of Good Hope ; Cape Colony. Matabili-land. In Mus. Oxon.
39. *sennaariensis*, Casteln., Hist. Nat. ii. p. 66 (1840).  
*dongolensis*, Reiche, Dej. Cat. 3rd ed. (1850).  
*sacer* var., Latr., Voy. Cailliaud. iv. 1827, p. 280.  
1.—Sennaar ; Dongola ; Nubia. In Mus. Oxon.
40. *paganus*, Harold, M. T. Munch. Ent. Ver. ii. p. 101 (1878) ;  
Col. Hefte xvi. p. 34 (1879).  
1.—W. Centr. Africa. Matabili-land.
41. *plausibilis*, Peringuey, Trans. S. Afr. Phil. Soc. vi. 2, p. 25 (1892).  
3.—South Africa.
42. *nitidicollis*, Lansb., C. R. Ent. Belg. xxvi. p. xxi. ; Revoils, Faun. et Flor. Comal. Col. p. 12, pl. 1, f. 3.  
1.—Somali Land.
43. *cribricollis*, Waterhouse, Proc. Zool. Soc. 1885, p. 231, pl. xv. f. 1.  
1.—Kilima-njaro.
44. *thomsoni*, Waterhouse, Ann. Mag. Nat. Hist. (5), xv. p. 377.  
1.—Masai Land.
45. *lævifrons*, Fairmaire, C. R. Ent. Belg. xxviii. p. cxxi. ; Ann. Soc. Ent. Fr. 1887 (6), vii. p. 103.  
1.—East Africa.
46. *planifrons*, Fairmaire, C. R. Ent. Belg. xxviii. p. cxxi. ; Ann. Soc. Ent. Fr. 1887 (6), vii. p. 103.  
1.—East Africa.
47. *opacipennis*, Fairmaire, C. R. Ent. Belg. xxviii. p. cxlii. ; Ann. Soc. Ent. Fr. 1887 (6), viii. p. 103.  
1.—East Africa.
48. *spencii*, McLeay, Horæ Ent. i. 2, p. 502.  
? Africa ? Probably Senegal River.

49. *suri*, Hausm., Illiger Mag. vi. 1807, p. 244.  
*caffer*, Serv., Encycl. Meth. x. 1825, p. 351.  
*capensis*, Dej., Cat. 3rd ed. p. 150.  
*hottentotus*, McLeay, Horæ Ent. i. 2, p. 498.  
*laicus*, Illiger MS.

3.—Cape Colony ; Cape of Good Hope ; Port Elizabeth ; Natal.  
 In Mus. Hope.

(To be continued.)

## NOTES AND OBSERVATIONS.

THE VERTICAL DISTRIBUTION OF *PIERIS RAPÆ*.—I was always under the impression until recently that this butterfly was a lowland species, only being found in cultivated parts. I have, however, met with it this summer in the Grindelwald, at an elevation of nearly 7000 feet above the sea-level, which is well within the upper alpine zone of Speyer ; while in the pine or lower alpine belt, some 1000 or 1500 feet lower, it was exceedingly plentiful. As I could find no trace of any cruciferous plant which could constitute the pabulum of its larva in either zone, I conclude that the insect does not permanently reside at such an elevation, but only occurs there in the winged state. Will any readers kindly inform me what is the greatest elevation at which they have observed this butterfly in the British Isles ? My experience is that it is an exclusively lowland species, not occurring above the altitude of 1000 feet further north than latitude 52°.—W. HARCOURT BATH ; Ladywood, Birmingham, Sept. 14th, 1894.

*ZYGÆNA TRIFOLII* AB.—In Mr. South's short notice (*ante*, p. 253) of the capture of a curious aberration of *Zygæna trifolii* by Mr. W. M. Christy, no mention is made of the condition of the legs. As there are two cases on record ('Materials for Study of Variation,' by W. Bateson, p. 148), one, of the replacement of a leg by a wing, and the other of the reverse phenomenon (although apparently neither seems fully substantiated), some further description relative to such points would, I feel sure, be welcomed by all students of variation. From the figure of the specimen I judge that the last pair of legs (at least) is normal ; if so, it would seem that, for some reason, the development of the dorsal pair of metathoracic imaginal discs was arrested, and that an attempt had been made to supply their place by division of the dorsal mesothoracic disc *of one side*. Of course this is pure surmise, and some people may argue that it merely shifts the responsibility of an explanation farther back in the life-history, and that the changes suggested are as difficult to understand the reason of as the phenomenon itself ; if so, the question must be an individual one ; but it *does* seem to me to account, in however imperfect a manner, for that correlation of variations, the occurrence of which, considering the extreme rarity of all variations involving absence or reduplication of appendages, can hardly be attributed to chance. For, suppose, in the absence of statistics, that the probability of one such variation is 1 in 1000, and



of another 1 in 1500 (which are, I think it must be admitted, high estimates, considering the number of insects annually examined), then the probability of the simultaneous occurrence of two such variations would be 1 in 1,500,000, or, to put it in another way, out of every 2499 individuals which exhibit variation there should be only one in which the two variations are correlated. If data of this sort were obtainable in any cases of variation; the extent to which the one variation depended on the other would be proportional to the amount of deviation from the result obtained by supposing complete absence of any such dependence. I should be glad to hear if any of your readers have tried this plan, or if they consider it a practicable means of settling such interesting points as correlation of variation, supposing it is possible to examine a sufficient number of specimens.—F. P. BEDFORD; Sept. 18th, 1894.

[I am obliged to Mr. Bedford for reminding me of an important omission in my short description of this remarkable insect. I should have mentioned that it had only four legs, as shown in the figure, and these, Mr. Frohawk informs me, are accurately drawn as regards size, shape, and position.—R. S.]

NOTE ON *SMERINTHUS POPULI*.—I have set thirty-six specimens of *S. populi* bred from larvæ found here last summer; a few others came out, but were damaged or dwarfed, and I took no note of sex or colour, but they were not remarkable in any way. Of the thirty-six I now have thirteen are males and twenty-three females; none of the males are of the red form, and only one tending to a reddish purple; of the females, five are of the very light red form, seven of the ordinary red form, and the balance (eleven) same colour as males.—W. B. THORNHILL; Castle Cosely, Castle Bellingham, August 19th, 1894.

LARVÆ ON MONKSHOOD.—With reference to Dr. Knaggs' remarks (*ante*, p. 268) on larvæ feeding on *Aconitum*, I may mention that four years ago I examined this plant for larvæ of *Plusia moneta*, which, however, I did not obtain; but I found larvæ of *Phlogophora meticulosa*, and other common species, the names of which I cannot at this moment recollect.—W. M. CHRISTY; Watergate, Emsworth, Hants.

NOTE ON NAPHTHALINE.—I should like to draw attention to the fact that naphthaline apparently will keep Lepidoptera relaxed for some days. Two of us on board this ship had been out insect-hunting at Mombasa (close to the equator), and had brought back a considerable number of specimens, which, owing to the ship being infested with small red ants, we could only set in detachments, as neither of us had a proper box for stowing setting-boards. On removing some of the insects from the collecting-box (which was *quite dry*), four days after capture, we found them perfectly relaxed, and fit for setting with the greatest ease. This condition of the insects would appear to be only due to naphthaline, as the atmosphere during the four days had not been at all damp. Previous to this occasion I had not found it necessary to put any of the preservative in my collecting-box, as I generally set insects within three hours of capture, but the enormous number of red ants now on board the ship compelled me to do so for safety's sake. I shall be very glad to know whether this property of naphthaline is a

recognised fact.—PHILIP DE LA GARDE; H.M.S. 'Raleigh,' Cape of Good Hope, Aug. 28th, 1894.

A CORRECTION.—I beg leave to point out an error in respect to a locality mentioned in the 'Entomologist' for July (*ante*, p. 223). Bagley Wood is not in Oxfordshire, but in Berkshire, though only distant a few hundred yards from the river boundary, and within three miles direct south of the city of Oxford. This mistake occurs frequently in Newman's 'Butterflies and Moths,' Canon Fowler's 'Coleoptera,' and in various other works, and doubtless arises through the locality being mentioned as "near Oxford," when it is naturally presumed that it lies within that shire.—F. W. LAMBERT; 70, St. Giles, Oxford.

## CAPTURES AND FIELD REPORTS.

OPHIODES LUNARIS.—Will the writer of a note on this species, who signs himself "One of the Innocents at Home," be good enough to send us his name and address, as we regret that we cannot publish his communication in its present form.

VANESSA POLYCHLOROS NEAR REGENT'S PARK.—I took a worn specimen of *Vanessa polychloros* in the garden here on August 26th. — CLAUD E. L. ELLIS; 69, Mornington Road, Regent's Park, N.W., Aug. 30th, 1894.

DEILEPHILA LIVORNICA AND NOLA STRIGULA IN DEVONSHIRE.—A specimen of *Deilephila livornica* was brought me by my gardener's boy on June 7th. Its identity has been confirmed by several entomologists. I have taken *Nola strigula* here; it does not seem to be known so far west by my friends.—C. F. BENTHALL; Cofton Vicarage, Starcross, Sept. 14th, 1894.

ACHERONTIA ATROPOS IN DEVON.—On August 14th last a villager brought me a splendid specimen of *Acherontia atropos*, taken in a potato field here.—CHAS. N. BUNN; Fremington, North Devon.

TAPINOSTOLA ELYMI IN SCOTLAND.—I have taken *T. elymi* at Montrose this year, and I believe that this is the first record of the occurrence of the species on the east coast of Scotland. — MONTAGUE GUNNING; The Mall, Montrose, N.B., Sept. 13th, 1894.

EARLY OCCURRENCE OF HYBERNIA DEFOLIARIA.—On the 11th of this month I took a fine specimen of this moth at light near Dulwich Wood. Is not this unusual?—G. S. ROBERTSON; St. Anne's, Thurlow Park Road, West Dulwich, S.E., Sept. 14th.

QUERY RESPECTING PIERIS BRASSICÆ.—It is rather strange this season that I cannot say certainly that I have seen a *Pieris brassicæ*, and I have been looking out for them, as I wanted some. I wonder if others have experienced the same scarcity.—W. J. LUCAS; 2, Gordon Road, Kingston-on-Thames.

PERONEA VARIEGANA IN NORTH-EAST CHESHIRE.—This is one of the few species of Lepidoptera that have not been really scarce this year around Macclesfield. Three forms, *i. e.*, the type, var. *asperana*, and var. *cirrana*, occurred in about equal numbers, and although all three were obtained from some hawthorn hedges in the district, certain of the hedgerows yielded a large proportion of *asperana* and *cirrana*, others of the type and *cirrana*, and



others again of the type and *asperana*. From two hedges, about two miles from each other, *cirrana* was most frequently obtained, and in another hedge *asperana* was predominant. An interesting form, somewhat resembling *P. comparana*, was occasionally met with, but the form least often observed was var. *borana*, which bears a superficial likeness to *P. permutana*. The pretty var. *albana* was not seen, but three specimens were obtained which exhibit variation in the direction of that form. Some of the specimens referred to as var. *cirrana* have the ground colour bluish grey, others brownish grey. I should be glad to have information as to the distribution of this form of *P. variegana*.—RICHARD SOUTH; Macclesfield, Sept. 15th, 1894.

DRAGONFLIES AT WISLEY POND, NEAR COBHAM, SURREY. — With a friend I visited the pond on August 28th last, in search of dragonflies, and no sooner had we reached the margin than *Æschna grandis* were seen hawking up and down, and evidently getting a good supply of insects. So wary, however, were they that with difficulty one was secured, and although several were seen during the day, no more were taken. A long time was given to trying to catch a female of *Æschna juncea*, which was continually dipping the tip of her abdomen in the water, evidently depositing eggs in the shallow water (about 1 ft. deep) in a corner of the pond containing a bed of dry *Equisetum*. On our approaching almost within striking distance she moved off a few yards, and recommenced ovipositing as before. At length, losing sight of her, we went to dinner. On returning she (or possibly another) was still there, but soon fell a prey as she was resting with her wings on the surface of the water and her body immersed in it. Plenty of *Libellula striolata* were to be seen flitting about, and intermixed with them were fair numbers of *L. scotica*. In one corner of the pond was a colony of the handsome little dragonfly, *Lestes sponsa*, the females being bronze-green, and their somewhat smaller mates of the same colour, but powdered with blue on the thorax and the end of the abdomen. On revisiting the pond, on Sept. 11th, we found the dragonflies much the same as regards species, but the larger ones were not so much in evidence; and as we did not catch one of the blue species of *Æschna*, we could not decide whether those we saw were *cyanea* or *juncea*. — J. S. BROCKLESBY; 17, Fairlawn Villas, Merton, Surrey.

NOTE ON DRAGONFLIES. — During a stay in the New Forest from August 11th to 25th, I saw very few of the large dragonflies, and those were *Æschna grandis*, and probably *cyanea*; but *Libellula striolata* [*Sympetrum vulgatum*] was in plenty, flitting about here and there in its usual lively manner, suddenly appearing, hovering for a time in the air, and disappearing again with lightning rapidity. With it, near Beaulieu, some specimens of *L. scotica* were seen, and there I took one female *Orithetrum cærulescens*, but did not see her more gorgeous mate. Over Lymington River a few individuals, both male and female, of *Calopteryx virgo* were still flying, but their season was evidently over. Near Oxford, during the few hot days at the end of August, *Æschna grandis* was very plentiful, but extremely difficult to catch—in fact, I find this the strongest flyer, and the most wily in disposition, of all the dragonflies, except perhaps *Anax formosus*, whose acquaintance I have made. However, if one remains perfectly quiet for twenty minutes or so, while it is hunting around, its suspicions begin to be allayed, and a chance is usually given for a stroke, but it must not be a bungling one, or the insect will probably go straight away, and be seen

again no more. It might be interesting to note that one still afternoon, while watching this insect at Wisley Pond, in Surrey, myself and companion were able to hear the stroke of its wings a dozen or more yards away, while it was hunting aloft far out of reach.—W. J. LUCAS.

NOTES FROM HOLSWORTHY, N. DEVON.—I have taken *L. sinapis* by the roadside from April to Aug. 11th, but find them very scarce. *A. galatea* is fairly plentiful, but difficult to get in good condition, owing, I suppose, to the very bad weather we have experienced this summer. *Vanessa cardui* is very common in the larval state; I have taken them from three distinct species of thistle, and one on the common nettle.—S. KIPPING; Holsworthy, N. Devon, Aug. 18th, 1894.

NEMOBIUS SYLVESTRIS.—On Aug. 15th last this little brown cricket was in plenty near the Lymington River, in the New Forest.—W. J. LUCAS.

CIRRHÆDIA XERAMPHELINA IN SOUTH ARGYLLSHIRE.—Seeing that this species is reported from Ayr (*ante*, p. 273), and that it is considered to be rare in the West of Scotland, it may be well to mention that *C. xerampelina* occurs about the Kyles of Bute, South Argyllshire, some fifty miles further north. Mr. King, in his published list of the Lepidoptera of the Clyde and district, does not mention this species.—W. M. CHRISTY; Watergate, Emsworth, Hants.

CIRRHÆDIA XERAMPHELINA IN AYRSHIRE.—After working the lamps constantly for a fortnight, I was fortunate enough to take *Cirrhwædia xerampelina* on Sept. 4th.—WILLIAM C. S. FERGUSSON; Glencoy, Ayr, Sept. 14th, 1894.

COLIAS EDUSA IN 1894.—*Bucks.*—I secured to-day four male specimens of *C. edusa* near Ivinghoe (Bucks). Two of the specimens are in good condition, while the other two are rather worn.—CHARLES ROTHSCHILD; Tring Park, Tring, Sept. 1st, 1894.

*Dorsetshire.*—From Aug. 14th to Sept. 11th *C. edusa* was decidedly scarce at Weymouth. I never saw more than six or took more than three on any one day, and it required hard work to get them, as they appeared unusually lively. Has anyone noticed that *edusa* flies nearly always from east to west, rarely harking back, or is this my fancy? Other butterflies, I take it, remain in the place they were born, but not so *edusa*; at least, so it seems to me.—(Rev.) W. CLAXTON; Hartley Wintney, Winchester.

*Hampshire.*—On August 16th a male specimen on the coast near Christchurch, and another on the 24th, not far from the same spot.—W. J. LUCAS.

*Middlesex.*—On the morning of Sept. 14th, while giving orders to my men at the Harrow Metropolitan Coal Wharf, I saw a specimen of *C. edusa* flying up and down the railway bank. To the surprise of the "coalies," I instantly gave chase, and captured the prize with my hat—a fine male. I returned in the afternoon with my net, but only caught a few "blues" and "coppers."—C. RHOADES SMITH; Greenhill, Harrow, Sept. 14th, 1894. I saw a fine specimen of the var. *helice* in Acton on August 26th last. Not having my net with me, I was unable to make a capture.—ST. W. BELL-MARLEY; Hammersmith.

*Surrey.*—On Sept. 10th a female example at Oxshott, and a male at Cobham on Sept. 11th.—W. J. LUCAS.

*Sussex.*—*C. edusa* appears to have been fairly common in the Eastbourne district this autumn. My attention was first called to it on the 2nd inst.,



when one was seen near Birling Gap, and one or two others (it may have been the same one seen at two different times) in the hollows to the east of Beachey Head. On the 5th one was flying on a sunny bank in front of the Convalescent Home, but as no net was at hand on either occasion none of these were taken; they were, however, to all appearance freshly emerged. On the 6th an hour's ramble through the hollows under Beachey Head procured three specimens, two of which were captured and found to be in fairly good condition; but the sky assuming its usual cloudy aspect, further search was useless. The morning of the 9th broke with brilliant sunshine, and appeared to offer a good opportunity for a further investigation of the likely spots for the species; the wind, too, was favourable, for although N.E. and chilly, it had, by reason of its direction, no effect upon the hollows under the downs, all of which were well sheltered from it by the higher ground. Accordingly, an early start was made, and having compassed the length of the "parade," one of the first insects seen was *edusa*, and it was promptly secured. Continuing on through Holywell, which, although at one time a particularly rich little bit of collecting ground, appears now to be almost bare of insect-life, we struck inland across a clover-field, but failed to discover any *edusa* upon it. I was not altogether surprised at this, for I have usually found that where the cultivated clover is surrounded by down-sides not under cultivation, the waste land has a greater attraction for this species than the clover-fields. But we soon reached the rough ground beyond, and there was *edusa* flitting about, first one, which was soon secured, then another at a little distance; but as at this moment the clouds came over the sun, and a sharp shower swept across the downs, soaking the herbage, and bidding one seek any scanty shelter that could be found, operations had to be suspended. Fortunately the rain did not last long, and, the sun shining forth again, the butterflies were soon on the wing, flitting over the wet herbage as merrily as if nothing had happened; but chasing *edusa* over soaking ground is not the most pleasant occupation one can imagine, and as the rain soon came down again with renewed energy, the chase had to be abandoned, but not until we had made up our total for the morning to half-a-dozen specimens. That evening I returned to town, but enough has been said to show that *edusa* has been by no means uncommon in the East-bourne district.—ROBERT ADKIN; Lewisham, September, 1894.

CATOCALA FRAXINI NEAR NORWICH.—I have to record the capture this morning of a male specimen of the rare *Catocala fraxini*, L., which I found at rest on the trunk of a small alder-tree on the banks of the Wensum, some two miles above Norwich. The insect was unfortunately rubbed in the catching.—E. W. CARLIER; 60, Unthinks Road, Norwich, Sept. 18th.

PIERIS DAPLIDICE AT RAMSGATE.—During my holidays this year at Ramsgate I was fortunate enough to capture a *Pieris daplidice*.—H. VINCE, Jun.; 6, Paragon Row, New Kent Road, S.E., Sept. 17th.

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## SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 23rd, 1894.—E. Step, Esq., President, in the chair. Mr. Hall exhibited two cabinet-drawers of Diurni, captured in Switzerland during a fortnight in July, comprising about 100 species, among

which were noticed specimens of *Hesperia lineola*, O. Mr. Filer, a very dark *Stauropus fagi*, L., from Ashdown Forest. Rev. J. E. Tarbat, a remarkable aberration of *Vanessa cardui*, L., from N. Wales [figured, ante, p. 277]. Mr. Mera, *Agrotis tritici*, L., and *A. aquilina*, Hb., stating that it was considered by some persons that these were forms of one species. A discussion ensued, Messrs. Barrett, Fenn, and others taking part. Mr. Frohawk, pupæ of *Vanessa urticae*, L., showing beautiful variation in colour induced by artificial surroundings. Mr. Sauzé, various forms of *Formica nigra*, and contributed notes thereon.—H. WILLIAMS (*pro Report. Sec.*).

September 13th.—The President in the chair. Mr. R. Adkin exhibited short series of *Arctia caia*, L., bred this year, with notes on the variation shown by them; on behalf of Mr. South, a series of *Peronea variegana*, Schiff., from N.E. Cheshire, comprising all the named forms, except var. *albana*; on behalf of Mr. Murray, of Carnforth, a beautifully bleached var. of *Erebia æthiops*, Esp., from his neighbourhood; and, on behalf of Mr. W. F. de Kane, a pale grey var. of *Agrotis segetum*, from N. Ireland. Mr. C. G. Barrett, a specimen of *Plusia moneta*, Fb., taken at Norwich by Mr. Tillet; and a beautiful red var. of *Oncocera ahenella*, Zine., taken at Folkestone by Mr. Purdey. Mr. Filer, series of *Epinephele hyperanthes*, L., from Brockenhurst and Halstead, showing local variation. Mr. H. Moore, male and female living specimens of the Orthopteron *Ephippigera vitium*, from Poitiers, and read notes as to their habits; he also contributed his observations upon Lepidoptera in France during August. Mr. A. Hall, a splendid var. of *Pyrameis myrinna*, from Bogota, S. America, with the type form for comparison. Mr. Dennis, a specimen of the "silver-fish," *Lepisma saccharina*. Mr. C. G. Barrett, photographs of the entomologists who recently met at Mr. Capper's house in Liverpool. Mr. Tutt gave a lengthy and interesting account of what Dr. Chapman and himself had observed during a tour through France, Switzerland, and N. Italy, especially referring to those species of Rhopalocera which occur in Great Britain. A discussion ensued, and Mr. Mansbridge gave a few remarks upon Lepidoptera in the Indian Territory, U.S.A. Mr. West, of Greenwich, exhibited a specimen of the rare Coleopteron, *Lebia cyanocephala*, L., from Bookham, with specimens of the two races of *L. chlorocephala*, Hoff., for comparison.—HY. J. TURNER (*Hon. Report. Sec.*).

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—August 20th, 1894.—Mr. G. T. Bethune-Baker, V.-P., in the chair. Mr. R. C. B. Chase, Southville, Priory Road, Edgbaston, was elected a member. Mr. C. J. Wainwright showed *Stratiomys potamida*, taken in Sutton Park, and said it was the first undoubted capture of a *Stratiomys* near Birmingham of which he knew. Mr. R. C. Bradley read some notes upon *Merodon equestris*. He had recently been breeding a number from some larvæ sent to him by Mr. McLachlan, and these he showed, and described their manner of emergence, &c. He said that they took a very long time to dry their wings; twenty-four hours after emergence some of them were still quite limp; this he attributed to want of sun. He said that it was becoming not at all uncommon round Birmingham, and he had taken quite a large number at Sutton, although a few years ago it probably did not occur here. Mr. A. H. Martineau described some experiments



he had been making upon different killing substances in order to ascertain their effect upon the colours of insects; amongst other things he had tried the fumes of sulphur, which certainly seemed to preserve the reds and yellows of Diptera and Hymenoptera better than ammonia or cyanide of potassium; if anything the effect being that the colours were heightened, not turned to black. On the whole he recommended a trial of sulphur.—COLBRAN J. WAINWRIGHT.

CARLISLE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—An ordinary meeting of this Society was held at Tullie House on August 2nd, and, in the absence of the President, Mr. R. Leighton took the chair. The report of the field-day, which took place on the second race-day, was read; after which Mr. E. H. Day gave his paper on "Natural-History Observations during a Trip to Loch Lomond." It consisted of a list of birds and insects observed, with notes on the circumstances under which they were seen. During the evening one of the members casually mentioned that he had seen a whitish cockroach, whereupon an animated discussion took place on these interesting but troublesome pests. Among the exhibits were *Saturnia carpini*, *Lasiocampa rubi* and *L. quercus*, also some varieties of *Melitæa aurinia*, by Messrs. J. and G. Wilkinson. Mr. G. Wilkinson had a box containing the life-history of *S. carpini*, from the egg to the perfect insect.

August 16th.—The Rev. H. A. Macpherson (President) in the chair. Mr. Wilkinson read an interesting paper on the entomological productions of the first four months of 1894. In the course of the evening the conversation turned on the sagacity of animals. The exhibits, as usual, were numerous, including many hawk-moth and two specimens of *Acherontia atropos*, one of which was caught last year at St. Ann's Hill near Carlisle. Mr. Wilkinson showed a large number of preserved larvæ.—JOHN BUCKLE, *Hon. Sec.*

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## OBITUARY.

WE learn with very great regret that Mr. WILLIAM MACHIN died of apoplexy on August 18th last, aged 72 years. He was an expert field-entomologist, and a most successful rearer of Micro-lepidoptera. It was on the occasion of one his excursions in quest of some of these in their earlier stages that he discovered the larvæ of *Phorodesma smaragdaria* on *Artemisia*. This fact was not made publicly known until 1886, when Mr. Elisha referred to it in a paper on the life-history of the species read before the Entomological Society of London. Mr. Machin was a frequent contributor to the early volumes of the 'Weekly Intelligencer,' which ceased its career in 1861; and he was an old and valued correspondent of the 'Entomologist.' He did not often write at any great length concerning the habits or life-histories of the rarer species of Tortrices or Tineæ, with which he was so well acquainted; but he was ever ready to share his knowledge with those who sought his assistance, provided he felt satisfied that his confidence would not be abused. Mr. Machin was held in high estimation by a large circle of entomologists, and his death will be widely and deeply deplored.

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## A CURIOUS ABERRATION OF *EREBIA ÆTHIOPS*.



THE above figure represents a "bleached" variety of *Erebia æthiops*, taken by Mr. H. Murray, of Carnforth, on August 10th, 1894, near that town. The specimen is somewhat below the normal size, being only 1 inch 8 lines in expanse; both right wings and the left hind wing are normal, but the whole area of the right fore wing is "bleached," the usually rich brown ground colour being reduced to a silvery brown-grey, and the colour of the patch enclosing the ocelli to a dirty yellow, on which the ocelli are conspicuous. The under side of this wing has the colour similarly reduced in tone, and when held to the light the wing is semitransparent.

The specimen is interesting, as exhibiting a phase of variation of somewhat frequent occurrence in *Epinephele ianira*, but which appears to have been seldom detected in the species under notice.

ROBERT ADKIN.

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## NOTES FROM NORTH LANCASHIRE.

By J. ARKLE.

WHY the summer of 1894, with its cloudy skies, intermittent sunshine, thunderstorms and drenching showers, should be so opposite in character to that of 1893, is a matter which may be dismissed as beyond even the ken of scientists. Rather is it that



the collector, before setting forth under such conditions, should examine his resources wherewith to withstand the warring elements. Should he send the scale down with a thump at twelve stone, he will probably find the mackintosh insupportable. The umbrella admits of more ventilation, but it has its disadvantages, and moreover is always a nuisance when not required. Lastly, there are spirits who, despising such contrivances, more than whisper the wisdom of neutralising the wet outside by an inward application. The various expedients will continue to meet at least sectional support, while all must agree that the chief desideratum is soundness in wind and limb.

With little more than a passing glance at such philosophy I took the way; once more (July 24th), to one of the finest hunting-grounds imaginable—North Lancashire. The raid on the insects began next day with a visit to Heysham Moss, near Morecambe, in company with a friend. Here we saw *Carsia paludata* var. *imbutata* still on the wing and in good condition, but *Cænonympha typhon* (*darus*), *Hyria muricata* (*auroraria*), and *Acidalia fumata* were over. This is remarkable, as I have previously taken, at the date, all the species together, both at Heysham and Wither-slack—*A. fumata* being near the vanishing point. *Bombyx quercus* and *Anarta myrtilli* were also observed on the Moss. We were getting on well, and the moths enjoying the hot sunshine, when a labouring man approached us—evidently with fell intent. He informed us his business was to order all persons of our persuasion off the Moss. This was most disappointing, but the thing was so nicely done, so sympathetically and yet so firmly, that we lingered little after realising the situation. The ruling passion, however, was strong, even in defeat, and we netted a few *C. paludata* as we trudged off. The very elements had suddenly become hostile, and a severe thunderstorm, with the usual accompaniments of sheet and forked lightning, with possible thunderbolts, made the place like a battlefield. We were soon wet to the skin, and had nothing to do but make the best of it until we reached Lancaster. Our repulse was a strange matter, and we did not improve it by afterwards asking permission of the landowner (who is a patron of the Lancaster Field and Entomological Club) to again visit the Moss. The request was declined, with regret. In bidding goodbye to the incident, and I suppose to Heysham Moss, it is needless reminding the reader that the owner is within his rights. The chief matter for regret is that the closing of this fine hunting-ground, where good insects are plentiful in the season and within narrow limits, should have been precipitated by the indiscretion of visitors.

But away we were next morning, to other fields and pastures new, like true nomads. Clougha Pike, one of the outlying Pennines, some 1500 feet above the sea and five miles east of

Lancaster, was the goal; for was not *Plusia interrogationis* taken there by the score last year, and would not *P. interrogationis* linger there still! What though our series were full of the moth—we do not see it fly every day, and we would go and see it! There were four of us—Messrs. Kershaw and Parker, of Lancaster, with our old friend, Mr. H. Murray, of Carnforth, as chief. For the double reason that we meant to *work* all the way and that the ground became more hilly as we walked along, our method of procedure was primitive, and dated before the invention of the wheel.

On either side of the road were occasional willows, low birch and foxgloves. The two first did not give us a single caterpillar, but it was seldom we examined a foxglove without finding *Eupithecia pulchellata* inside the blossoms. At last the Pike was reached, and we found it a very different thing to the easy-looking height it appears when seen from Lancaster. The sides are clothed with heather, but seamed by deep ravines—each with its mountain torrent. Huge boulders are strewn about in eccentric positions, and the south-west slope of the mountain is a tumbled heap of rocks which ought to be interesting to the geologist. Although the sun was hot and the day favourable, *P. interrogationis* did not put in an appearance. From a youthful entomologist we learnt that a few individual specimens had been captured, but the insect had evidently determined to sustain the erratic character of the *Plusiidae* as we saw none. *B. quercus* was an occasional visitor—our young friend having a fresh female in his possession. But the males were all more or less rubbed and chipped—experienced, in short, and shy; so the “assembling” was a poor exhibition. Butterflies were only represented by a few *C. pamphilus*, amongst which I netted two yellowish specimens and a black-bordered one. The other heath insects were *A. myrtilli*, *Agrotis porphyrea* and *Larentia cæsiata*. But one of the charms of entomology is that the unexpected so often happens, and on this occasion the charm was all on the side of unexpected interest. A commoner moth than *L. didymata* could not well be, but here it was in hundreds if not thousands. And a very different insect it was to the dusky representative of the lowlands. With the ground colour of the wings a pearly white, with its spots, bars and zigzag lines almost absent in frequent specimens, or gradually rising to the type in others, it formed an object over which the student in variation might well become enthusiastic. The difficulty would be to devise a name for each particular form. I only wish I had secured a drawerful, but, in our continued search for *P. interrogationis*, the chance slipped by.

In the ravines, wooded on each side with low growths of oak and other trees, we came across *Hyppisipetes sordidata* (*elutata*),



varied as usual, some being beautifully green (alas, the green fades !), others of the smoky form. Another moth in these glens worth a passing notice is *Cidaria populata*. The ground colour of the upper wings was not so yellow as in our Delamere Forest insect; it was more obscured by smoky shades and darker central bands; more approaching the blackish examples which are to be met with at Rannoch.

Tea was thoroughly enjoyed at a farmhouse near the foot of the Pike, and then we set off for home. About midway along, to the right of the road and over the high stone wall, is a deep little glen about thirty yards across, with, of course, the inevitable brook at the bottom. The sides were clothed with tall grasses in full flower, ferns, oak and bramble scrub, and a perfect illumination of blossoming foxgloves. This fairy spot we had reserved for our return, and it well repaid us for in a quarter of an hour we had as many larvæ of *E. pulchellata* as we cared to take. I took, in addition, a green *Noctua* caterpillar out of one of the foxglove flowers—probably a *Dianthæcia*. All have gone down, long ago, for their winter sleep.

Although a black, ominous cloud rose in the afternoon over Clougha Pike and followed hard upon us on our way home, the sea horizon was clear and sparkling in the sun away to windward (S.W.) next morning. By an early train we again joined Mr. Murray, at Carnforth Station, and made our way *viâ* Arnside and the Kent embankment to Witherslack Moss. At rest on the rocks where we left the embankment we took *Gnophos obscuraria* and a fine, but doubtful, *Scoparia*. Fringing the cornfields *Chrysanthemum segetum* (corn marigold) showed its wealth of yellow flowers just as it did two years ago, and an occasional *Argynnis aglaia* or *A. adippe* lent animation to the scene. On the Moss lots of fresh *B. quercus* let us a good deal into the secret of "assembling," about which I may have something to say in a future paper. Many *C. paludata* (*imbutata*) were netted, and in fine condition, one *H. muricata* (*auroraria*) and a couple of male *Nemeophila plantaginis*. *Crambus margaritellus* and *Mixodia schulziana* were nuisances, as we frequently mistook them, when on the wing, for *C. paludata*.

Our next ground was Meathop Moss, by the side of the wood. Here *Selidosema ericetaria* (*plumaria*) was a plentiful insect, although rubbed and chipped as a rule. Females were not so common as males. *N. plantaginis* was again met with.

Retracing our steps, and taking larvæ of *Eupithecia constrictata* by the way, off flowers of wild thyme, we made the best of a waning day in a hurried visit past the Derby Arms and through the village of Witherslack to the Pug Rocks. Our object was *Sciaphila penziana*, and, although late in the season as well as late in the day, we got a fine specimen at rest on a rock face.

Other captures were *Satyrus semele*, *Epinephela ianira* (both in faded condition), and two or three *Anaitis plagiata*.

On the 29th, amid splendid weather, we again joined Mr. Murray at Carnforth, and took tickets for Cark just by the north shore of Morecambe Bay. From Cark we walked the road (five miles) through the Holker Mosses to Haverthwaite, working the mosses on either side. To the left they extend almost to the estuary of the Leven—the short river which supplies an outlet to Lake Windermere. On the right the moss-land is abruptly terminated by rocky and densely wooded heights, the whole forming scenery of the loveliest description. Along the road—wooded on either side by salallows, mountain ash, birch and oak—we took *Acidalia incanaria*, pale *Melanippe fluctuata*, *Acronycta psi* and *Cosmia trapezina* at rest on walls or tree trunks, and Mr. Kershaw secured a fine specimen of *Venusia cambrica* (*cambricaria*). By beating mountain ash I netted a few Crambidae which have been identified as the rare *C. fascelinellus* (*pedriolellus*). Larvæ of *Euchelia jacobæ* were abundant on the roadside ragwort, and *Gortyna ochracea* (*flavago*) in stems of thistle and burdock. On the moss to the left of the highway a few *Lycæna ægon* were captured, fresh from the chrysalis. It is worth remarking that this butterfly was well out last year at Abersoch in the first week of June. The North Lancashire form is of the usual size. The silvery spots are very pronounced in both sexes. The females (which were scarce) are bluer than usual, and show the red marginal spots on the wing surfaces indistinctly. I saw no specimens in which these spots were present on the upper wings, and in two examples they are entirely absent on the lower. Amongst the three *N. plantaginis* taken on the moss was a male, unfortunately rubbed, with the yellowish markings on the upper wings replaced by white. “Skippers” were represented, as at Witherslack, by *Nisioniades* (*Thanaos*) *sylvanus*, “Fritillaries” by a few late *A. adippe* and *A. aglaia*, “Geometers” by *G. papilionaria*, and “Micros” by *Pyrausta aurata* (*punicealis*), *P. purpuralis*, and *P. ostrinalis*. A fine caterpillar, probably a female from its size, of *Saturnia pavonia* (*carpini*) fell to my share feeding on heather. It was a matter of curiosity, as imagines were flying plentifully enough, to come across a large, full-fed caterpillar of *B. quercus* lying on the roadway, but cut almost in two by a passing vehicle. Haverthwaite, about four miles south-west of Lake Windermere, closed a most interesting day, and we trained back to Carnforth and Lancaster *via* Ulverston and Grange.

Here the weather fairly broke down. Intervals there were when something entomological could be done, and in one of these a sugaring party was organised. But the result was utter failure—we did not attract even an earwig. In spite of the rain it was getting time for *Erebia æthiops* (*blandina*) by the first of August.



A summons from our chief, on the 4th, set everything else aside, and early the following morning, although the slate roofs were wet, we saw the sea horizon clear and sunny again over Sunderland Point. But Flattery never smiled so fair. We soon found ourselves at Carnforth Station, and met Mr. Murray as if we had been dispensers of the weather. Away we went to Witherslack, and beyond, through hazel dingles gay with nuts, where holly, yew and juniper find a natural growth, where the hop-bine climbs, and primrose and scented violet speak the glories of departed spring. I had never seen *Blandina* on the wing, and it was a treat. For there we found it in scores, fresh from the chrysalis, flitting like *E. ianira* (against which it seems to have considerable animosity) over grassy hillocks or in open spots in woods. It looks almost black on the wing. We soon had as many as we could wish. The specimens captured showed considerable variation. The "chestnut antemarginal band of the forewings shaped like a human footprint" varies in shape and width and is sometimes prolonged to the inner margin. (My quotations are from Mr. Kane's apt description of the insect in his 'European Butterflies,' p. 105). The author goes on to mention "a double, bipupilled, apical eye, and a second (often a third) lower down" upon the chestnut band. These characters appear in the Witherslack specimens. Sometimes the additional eye is equal in size with the others, especially in females which, by the way, were scarce in comparison with males; sometimes it is small and without the white pupil; sometimes, when indistinct, it appears only upon one wing; and in other examples it is not repeated on the under side. The hind wings show little variation, but are sepia brown like the upper, and "with an antemarginal row of eyes upon chestnut patches not very conspicuous." As the "eyes" are jet black and the pupils a pure white, they give the butterfly a handsome appearance. The eye-patches are usually three, but females often possess four.

We next turned our attention to *Gonopteryx rhamni*, which was just appearing. Mr. Murray netted a fine specimen, the only one captured. Since that date, however, the butterfly has been on the wing in hundreds at the place. After noon the day entirely changed, and, finding nothing more was to be done, we made tracks for Arnside to catch the train home. Long before we reached the Kent viaduct we were wet through.

A word or two in conclusion about the dragonflies. On the mosses, excepting Heysham, *Libellula quadrimaculata*, *Sympetrum scoticum* and *Æschna juncea* were captured or identified. But these species do not appear in anything like the Delamere numbers. Another dragonfly, which has up to the present evaded capture, I believe will some day turn out to be the grand *Anax formosus*. On the limestone, whilst netting *Blandina*, I saw a second doubtful species, of the *Æschna* type, but altogether

different to anything I have seen described. The wings were colourless, the body pale with just the faintest tint of lavender. I left the butterflies at once, but before I reached the coveted prize it was gone, and I saw it no more.

Chester, September 18th, 1894.

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## FURTHER OBSERVATIONS UPON *EMYDIA CRIBRUM*.

By J. H. FOWLER.

In the 'Entomologist' for November, 1892 (xxv. 269), I gave a brief account of *Emydia cribrum*, describing the larva, &c., before hybernation; and although I failed in bringing the larvæ through the winter, I have, as will be seen by the following account, watched them through their metamorphoses. *Cribrum* is a slow feeder, therefore a troublesome species to rear.

Upon a certain heath near Bournemouth, during July and August of 1893, this species was taken abundantly; and about March the 10th of this year I went to the said heath with Mr. Taylor to obtain larvæ, and found them in fair numbers. A few visits secured me about 150; several collectors obtained greater numbers before my arrival. The locality is situated upon a level piece of ground bordering a pine wood, where *Aira cæspitosa* grows almost alone, with just here and there a clump of heath; it was upon the grass that we found the larva; none were to be seen upon anything else.

I always found the larva upon the sunny side of the *Aira*, stretched out and evidently enjoying the rays of the sun, in fact very similar to nearly all larva of the Arctiidæ upon coming out of winter quarters. Securing themselves to a blade of grass firmly, they were easily detected, being almost black upon the bright green grass; the least touch caused them to roll into a compact ring. I took many fresh from hybernation, the sand still sticking to their skins; they were then just  $\frac{1}{4}$  in. in length.

March 20th. A few changed their skins. Dorsal stripe broadly grey, subdorsal lines a shade darker; laterals broad dirty red, under portions grey, just tinged with red; each segment with four tufts of radiating hairs or bristles situated upon very prominent polished black warts, the dorsal pair being semidouble; laterals less conspicuous and single.

April 5th. Many skins cast. Length now  $\frac{5}{8}$  inch; all markings very distinct, a few have the dorsal stripe tinged with green; three larvæ black upon dorsal portions, and in addition to the laterals being reddish the whole under portion is now of the same colour.

May 10th. Last skin changed. Length  $\frac{3}{4}$  inch; stout, and slightly tapering at each extremity; markings have changed



considerably; dorsal stripe almost white; laterals and intermediate spaces all grey; remaining dirty red. The whole skin appears greasy; the dorsal rows of hairs have become quite stiff, jet black, but each radiating clump is centred with four or five grey hairs; laterals in some cases have almost vanished; the warts are very prominent now, black and shining upon the pale ground. The head also jet black, highly polished, and deeply notched in the centre.

I fed the larvæ throughout upon common groundsel, as they did not seem to do well upon any other plant. In handling, the bristles enter the skin, causing a slight irritation.

June 12th. Two pupated; the larvæ settled in the corners of the box and spun an extremely light cocoon of white silk, not strong enough to support them, as both fell out and pupated upon the soil. When first formed the pupa is pale reddish, with the tubercles, &c., showing distinctly, but within twelve hours the whole becomes jet black and polished; anal angle smooth and rounded, immovable; it greatly resembles the pupæ of *E. jacobææ*. Other larvæ pupated up to July 25th, right in the centre of the *Aira* plants, forming small and very frail egg-shaped cocoons. Several died, but many were infested by a small *Microgaster*, which emerged from all portions of the host, and spun up small white cocoons; the flies from these were black, with red legs. They began emerging during April.

July 12th. The first imago of *E. cribrum* emerged, and from that date the dates of emergence were as follows:—

	♂	♀		♂	♀		♂	♀
July 12th ...	1	0	July 25th ...	2	2	Aug. 5th ...	2	0
„ 16th ...	0	1	„ 26th ...	0	1	„ 6th ...	1	0
„ 17th ...	1	0	„ 27th ...	1	0	„ 8th ...	0	1
„ 18th ...	0	1	„ 28th ...	1	4	„ 9th ...	0	2
„ 19th ...	1	1	„ 30th ...	0	2	„ 11th ...	3	0
„ 20th ...	0	2	Aug. 1st ...	1	0	„ 12th ...	1	0
„ 21st ...	1	2	„ 2nd ...	0	1	„ 16th ...	1	0
„ 22nd ...	0	3	„ 3rd ...	0	1	„ 20th ...	1	0
„ 23rd ...	1	3						

Several specimens bred were cripples, but these are not included in above.

It may be interesting to give the dates of capture of the imago in the Ringwood locality:—June 13th, a female; June 21st, thirteen; June 27th, fourteen; on July 3rd and subsequent dates I went for it, but did not see any. The Ringwood ground for this species is about fourteen miles from its Bournemouth haunts.

The series bred are more typical than I get here; one male has a beautiful black central band, a few are almost black, the grey nervules being conspicuous, but nothing very remarkable.

Poulner, Ringwood, Hants, Sept. 8th, 1894.

THE COPROPHAGOUS LAMELLICORNS; A REVISED LIST  
OF SPECIES BELONGING TO THE GENERA *PACHY-*  
*LOMERUS*, KIRBY, AND *ATEUCHUS*, WEBER.

By JOHN W. SHIPP.

Assistant in the Hope Dept., Oxford University Museum.

(Concluded from p. 293.)

ETHIOPIAN REGION.

50. *westwoodi*, Harold, Col. Hefte v. 1869, p. 95.  
1.—S.W. Africa.
51. *venerabilis*, Harold, Col. Hefte viii. p. 2.  
1.—North Abyssinia.
52. *æratius*, Harold, Col. Hefte viii. p. 2; Gerst. Van de Decken's  
Reisen, iii. pt. 2, pl. 7, fig. 5.  
var. *minor*, Harold, Col. Hefte viii. p. 2.  
1.—Zanzibar.
53. *pustulosus*, Harold, Col. Hefte viii. p. 2.  
1.—Zanzibar.
54. *catenulatus*, Gerst., Harold's Col. Hefte viii. p. 2.  
1.—Zanzibar.
55. *salebrosipennis*, Fairmaire, C. R. Ent. Belg. xxviii. p. cxlii.;  
Ann. Soc. Ent. Fr. 1887 (6), vii. p. 104.  
1.—East Africa.
56. *nepos*, Fairmaire, C. R. Ent. Belg. xxviii. p. cxlii.; Ann.  
Soc. Ent. Fr. 1887 (6), vii. p. 104.  
1.—Zanzibar.
57. *vethi*, Lansberge, Notes Leyd. Mus. 1886, p. 69.  
1.—Benguela.
58. *vanderkelleni*, Lansberge, Notes Leyd. Mus. 1886, p. 70.  
1.—Humpata.
59. *corinthius*, Fairmaire, Ann. Soc. Ent. Fr. 1887 (6), vii. p. 102.  
1.—East Africa.
60. *stigmaticus*, Fairmaire, Ann. Soc. Ent. Fr. 1887 (6), vii. p. 102.  
1.—East Africa.
61. *politifrons*, Fairmaire, Ann. Soc. Ent. Fr. 1887 (6), vii. p. 105.  
1.—East Africa.
62. *sericeipennis*, Fairmaire, Ann. Soc. Ent. Fr. 1887 (6), vii.  
p. 107.  
1.—East Africa.
63. *platynotus*, Bates, Ent. Mo. Mag. xxiv. p. 201.  
1.—East Africa.
64. *porosus*, Bates, Ent. Mo. Mag. xxiv. p. 202.  
1.—East Africa.



65. *canaliculatus*, Fairmaire, Ann. Soc. Ent. Fr. 1888 (6), viii. p. 177.  
3.—South Africa.
66. *rostratus*, Peringuey, Trans. S. Afr. Phil. Soc. iv. p. 92.  
3.—South Africa.
67. *sulcipennis*, Quedenfeldt, Berl. Ent. Zeit. xxxii. pl. 161.  
1.—Central Africa.
68. *poggei*, Waterhouse, Ann. Mag. Nat. Hist. (6), v. p. 367 (1890).  
1.—Congo.
69. *reichei*, Waterhouse, Ann. Mag. Nat. Hist. (6) v. p. 365 (1890).  
3.—Cape of Good Hope.
70. *anderseni*, Waterh., Ann. Mag. Nat. Hist. (6), v. p. 366 (1890).  
1.—Lake Nyassa.
71. *subaneus*, Harold, Col. Hefte. v. p. 57 (1869).  
*lamarki*, Casteln. (non incert).  
*cuprifer*, Sturm. Cat. 1826, p. 98.  
1.—Senegal R.
72. *pubiventris*, Lansberge, Col. Hefte xii. p. 5 (1874).  
1.—Mozambique.

## PALÆARCTIC REGION.

73. *acuticollis*, Motsch., Bull. Mosc. 1849, iii. p. 104; Dohrn, S. E. Z. xliii. 1882, p. 372.  
Kirgisias.
74. *carinatus*, Gebl., Bull. Ac. Petr. viii. p. 371 (1841); Motsch. Bull. Mosc. 1849, iii. p. 106.  
Siberia; N.E. Russia; Ural Mts.
75. *cicatricosus*, Lucas, Expl. Alger. Ent. p. 249, t. 23, f. 5 (1849); Rosenh. Their. Andal. p. 127; Dej. Cat. 3rd ed. p. 150.  
Andalusia; Gibraltar; Algeria.
76. *impius*, Herbst, Kafer. ii., p. 302, t. 20, f. 1; McLeay, Horæ Ent. i. 2, p. 499.  
*sacer* var., Schonh. Syn. Ins. i. p. 58.  
S. Europe (?).
77. *laticollis* (Scar.), Linn. Syst. Nat. 2, 549, 38; Fb. Syst. Ent. i. 28, 110; Spec. i. 31, 140; Mant. Ins. i. 16, 160; Ent. Syst. i. 62, 206; Herbst, Kafer. ii. p. 307, pl. 20, f. 6; Petagné, Spec. 2, 4; Oliv. Ent. i. n. 3, p. 152, 185, pl. 8, f. 68; Panz. Ent. G. p. 17, 68; Faun. Germ. 48, 8; Rossi, Faun. Etr. p. 14, 33; Sulz. Hist. pl. 1, f. 3.  
(*Copris*), Oliv. Encycl. Meth. t. 5, p. 171, 119.  
(*Ateuch.*), Fab., Syst. El. t. 1, p. 55; Walek. Faun. Par. i. p. 8; Sturm. Deutsch. Fn. i. p. 69; Latr. Hist. Nat. t. 10, p. 95, 4; Suckow, Naturg. p. 205; McLeay, Horæ Ent. p. 54; Boit. Man. t. i. p. 314; Casteln. Hist. Nat. ii. p. 65.

*serratus*, Fourc, Ent. Par. p. 13.

*hottentota*, Dumeril, Dict. des Sc. Nat. t. 5, p. 280; Geoff. Hist. Nat. i. p. 89.

var. *lavicollis*, Mulsant, Col. Fr. Lamell. p. 52.

Italy; France; Spain; Barbary; Tunis; Sardinia, &c.

78. *pius*, Illiger, Mag. ii. p. 202; Sturm, Ins. Deutsch. i. p. 66; McLeay, Horæ Ent. ii. p. 498; Erichs. Nat. Ins. iii. p. 752.

*eremita*, Stevens, Dej. Cat. 3rd ed. p. 150.

*europæus*, Motsch., Bull. Mosc. 1849, iii. p. 103.

*sacer*, Laicht. Ins. Tyrol. i. p. 15; Duft. Faun. Austr. i. p. 154; Sturm. Verz. Od. Ent. Handb. 76, 64.

var. *affinis*, Brulle, Exp. Sc. Morea, p. 165, t. 38, f. 3.

var. *digitatus*, Motsch., Bull. Mosc. iii. p. 105 (1849).

var. *infirmus*, Fisch., Ent. Ross. ii. p. 211, t. 27, f. 5.

var. *opacus*, Motsch., Bull. Mosc. iii. p. 107 (1849).

var. *punctulatus*, Muls., Col. Fr. Lamell. p. 46 (1842).

var. *retusus*, Brulle, Exp. Sc. Morea, p. 166, t. 38, f. 4.

var. *subsulcatus*, Muls., Col. Fr. Lamell. p. 46 (1842);

var.  $\beta$ , McLeay, Horæ Ent. ii. p. 498.

Fr. ?; Sicily; Crimea; Russ. Mer.; Armenia; Greece; Caucasus; Palestine.

79. *puncticollis*, Latr., Mem. Mus. Hist. Nat. v. p. 7, t. 18; Dej. Cat. 3rd ed. p. 150; Lucas, Exp. Alg. Col. pl. 23, f. 6.

*armeniacus*, Ménétr., Cat. Reis. p. 173.

*hypocrita*, Casteln., Hist. Nat. ii. p. 64.

*parumpunctatus*, Klug, Symb. Phys. v. t. 41, f. 2.

var. *nigrociliatus*, Motsch., Bull. Mosc. 1849, iii. p. 107.

var. { *nudifrons*, Fisch., Ent. Russ. ii. p. 211.  
*laticollis*, Fisch., l. c., t. 27, f. 6.

var. *sericeus*, Motsch., Bull. Mosc. 1849, iii. p. 107.

Armenia; Caucasus; Persia; Egypt; Algeria; Palestine; Turkey; Volga; W. China.

80. *sacer* (Scar.), Linn., Syst. Nat. i. pt. 2, p. 545; Amœn. Acad. t. 5, pl. 3, f. 189; Fb. Syst. Ent. pp. 28, 109; Spec. Ins. i. p. 31; Mant. Ins. i. p. 16; Ent. Syst. i. 62, 205; Lepech. Tagebr. i. p. 249; Goeze. Ent. Beytr. i. p. 15; Fuess. Mag. i. pp. 144 et 166; Laicht. Verzeich. i. p. 15; Schæf. Icon. pl. 201, f. 3; Herbst, Kafer. t. 2, p. 304, 107, pl. 20, f. 2; Petagné, Spec. pp. 2, 3; Reamur, Gen. Ins. pl. 1, f. 3; Oliv. Ent. i. n. 3, pp. 150, 183, pl. 8, f. 59; Rossi, Faun. Etr. i. p. 14; ed. Helw. t. i. p. 15; Panz. Ent. Germ. p. 17; Faun. G. 48, 7; Blumenb. Handb. p. 326; Man. p. 397; Tigny, Hist. t. 5, p. 251, f. 1; McLeay, Horæ Ent. 49, i. var. *a*; Muls. Col. Fr. Lamell. p. 46 (1842).



- (*Copris*), Oliv. Encycl. Meth. t. 5, 170, 117; Nouv. Dict. d'Hist. Nat. 1st ed. t. 3, p. 453; Latr. Cuv. Regne Anim. 1st ed. t. 3, p. 277; Lamarek, Anim. Sans Vert. t. 4, p. 570; Dumeril, Dict. des Sc. Nat. v. p. 280.
- (*Ateuch.*), Fb., Syst. El. t. 1, p. 54; Illig. Mag. t. 2, p. 122; Panz. Schæf. Icon. p. 175; Latr. Hist. Nat. t. 10, p. 94; Genera, ii. p. 77; Crust. et Ins. i. p. 553; Germar, Reis. Nach. Dalm. p. 183; Suckow, Naturg. p. 204; Boit. Man. i. p. 314; Guerin, Icon. du Regne An. pl. 21, f. 2, det.; Dict. Pitt. d'Hist. Nat. i. p. 324, pl. 33, f. 3; Casteln. Hist. Nat. ii. p. 63.
- (*Actinophorus*), Panz., Symb. Ent. i. p. 56, pl. 6, f. 3; Duftsch. Faun. Austr. i. p. 159.
- corsicus*, Latr., Dej. Cat. 3rd ed. p. 150.
- crenatus*, DeGeer, Mem. Ins. vii. p. 638, t. 47, f. 18; Retz. Spec. 123, 739.
- degeeri*, McLeay, Horæ Ent. i. 2, p. 502.
- dufresni*, McLeay, Horæ Ent. i. 2, p. 498.
- edentulus*, Muls., Col. Fr. Lamell. p. 46 (1842).
- impius*, Fb., Syst. El. i. p. 55.
- inermis*, Muls., Col. Fr. Lamell. p. 46 (1842).
- platychilus*, Fisch., Ent. Russ. ii. p. 211.
- striatus*, Dej. Cat. 3rd ed. p. 150.
- var. *tmolus*, Fisch., Ent. Russ. i. p. 140, pl. 12, f. 1, 2.
- var. *peregrinus*, Kolbe, Arch. f. Nat. lii. i. p. 184, pl. xi. f. 26.
- Medit. Region; Spain; Fr.; Barbary; Morocco; Asia Minor; Sicily, &c.; S. Russia (Sebastopol); Corea.
81. *semipunctatus* (*Scar.*), Fb., Ent. Syst. i. 63, 207; Panz. Faun. Germ. 67, 6; McLeay, Horæ Ent. p. 504; Muls. Col. Fr. Lamell. p. 50 (1842).
- (*Ateuch.*), Fb., Syst. El. i. p. 55; Latr. Hist. Nat. t. 10, 95; Suckow, Naturg. p. 205; Boit. Man. i. p. 304; Casteln. Hist. Nat. ii. p. 65; Schonb. Syn. i. p. 59.
- (*Actinophorus*), Sturm., Verz. i. p. 75; Duftsch. Faun. Austr. i. p. 160.
- (*Scar.*), *variolosus*, Oliv. Ent. i. 3, p. 151, t. 8, f. 60; (*Copris*), Encycl. Meth. v. p. 171.
- var. *subinermis* (*Scar.*), Muls., Col. Fr. Lamell. p. 50 (1842).
- var. *substriatus* (*Scar.*), Muls., Col. Fr. Lamell. p. 50 (1842); var.  $\beta$ , McLeay, Horæ Ent. ii. p. 504.
- S. Europe; Sardinia; France; Algeria.
82. *typhon*, Fisch., Ent. Russ. ii. p. 210, t. 27, f. 4; Bull. Mosc. 1829, vi. p. 189.
- clypeatus*, Motsch., Bull. Mosc. 1849, iii. p. 106.
- Tartary.
83. *variolosus* (*Scar.*), Fb., Mant. Ins. i. p. 16; Panz. Faun. Germ. p. 67; McLeay, Horæ Ent. i. 2, p. 503.

- (*Ateuch.*), Fb., Ent. Syst. i. p. 63; Erichs. Nat. Ins. iii. p. 753; Sturm. Verz. 76, 66.  
 ♀ *morbillosus*, McLeay, Horæ Ent. i. 2, p. 503.  
 Dalmatia; Barbary; Tunis; Sicily, &c.

## ORIENTAL REGION.

84. *brahminus*, Casteln., Hist. Nat. ii. 1840, p. 64; Illiger, Dej. Cat. 3rd ed. p. 150.  
 India Or.  
 85. *devotus*, Redtenb., Hügel. Kaschn. iv. 2, p. 515.  
 India Or.  
 86. *erichsoni*, Harold, Col. Hefte ii. p. 94 (1867).  
 India Or.  
 87. *gangeticus*, Casteln., Hist. Nat. ii. p. 64.  
 88. *sanctus*, Fb., Ent. Syst. Suppl. p. 34; Syst. El. i. p. 56;  
 Casteln. Hist. Nat. ii. p. 65.  
 India Or.; Punjab.  
 89. *wilsoni*, Waterh., Ann. Mag. Nat. Hist. (6), v. p. 366 (1890).  
 Persia.

## ETHIOPIAN REGION.

Since the above was in the press, I have seen a copy of the *Annales de la Soc. Ent. Belgique*, and find that Fairmaire has described a new species from Somali-land, and mentions the following as occurring in the same district:—*egyptiorum*, Latr.; *ætatus*, Gerst.; *cornifrons*, Cast.; *lævistriatus*, Fairm., Ann. Soc. Ent. Belgique, xxxvii. p. 147 (1893). 1.—Banan; Ouebbi; Abdallah. This species is very closely allied to *lamarcki*.

*A. semipunctatus*, Fb. The habits of this species are noticed by Berge (C. R. Ent. Belgique, xxvi. p. cxlix); Ponj. (Bull. Soc. Ent. France (6), v. p. cix).

*A. sacer*, L. Habits and flight discussed by Fabre (Souvenirs Entomologiques, pp. 1–38, 1879); Westwood (Proc. Ent. Soc. 1868, p. xxv.).

*A. palemo*, Oliv., is identical with *intricatus*, Fb.; while *morbillosus*, Fb., only differs from *intricatus* in having the punctures on the thorax large, coarse, and widely separated; the punctures in *intricatus* being very fine and close together. Lacordaire (Gen. des Coléoptères, iii. p. 68) brackets *palemo* with *morbillosus*, Fb.

*A. cicatricosus*, Lucas, is very closely allied to, if not identical with, *A. variolosus*, Fb.

The following genus, *Mnematidium*, Ritsema, was inadvertently omitted from my table. It is, however, closely allied, and indeed hardly separable from the true *Ateuchus*, from which it differs in having the body flattened and parallel, the anterior



femurs toothed and thickened, and the joints of the tarsi triangular and subequal.

Lansberge founded the genus *Octodon*, in which he placed *Ateuchus multidentatum*, Klug, but, owing to the name being pre-occupied (Mammalia), Ritsema changed it to *Mnematidium*. Bedel, evidently not having seen Ritsema's name, called it *Neoctodon*, which however cannot stand. Lansberge's description of the genus reads thus:—"Qui se compose des espèces à corps aplati et parallèle, à cuisses antérieures dentées à écusson apparent et à articles des tarses triangulaires subégaux."

**MNEMATIDIUM, Ritsema.**

Tijds. voor. Ent. xxxi. p. 207 (1889).

*Octodon*, Lansberge, Ann. Soc. Ent. Belg. xvii. p. 183.

*Neoctodon*, Bedel, L'Abeille, xxvii. p. 283 (1892).

*multidentatum*, Klug, Symb. Phys. v. t. 41, f. 3.

*interruptus*, Dej. Cat. 3rd ed. p. 150.

Hab. Syria.

NOTE ON *EUMESTLETA*, BUTL., &c.; A GROUP OF  
NOCTUÆ OF THE *EUBLEMMINE* TYPE.

By A. G. BUTLER, Ph.D.

I FOUNDED this genus ('Entomologist,' xxv. 189) for the reception of *Anthophila flammicincta*, Walk., and allies; it has the general aspect of *Mestleta*, and agrees with it in leg structure. At the time when I indicated this group and the species referable to it, the allied genus *Mestleta* was placed among the Deltoid moths, and therefore I naturally concluded that if one group was rightly placed there, the other ought to follow. Mr. Hampson has subsequently shown that *Mestleta* is a genus of true Noctuæ allied to *Tarache* and neighbouring genera, and not a Deltoid. My natural conclusion, based upon a false foundation, therefore naturally falls to the ground.

How Prof. Smith failed to see our series of twelve specimens of this species, I do not understand. The genus was arranged long before he examined the collection and in the *Eublemmine* group, from which I never removed it, but to which I subsequently transferred *Mestleta* and allies.

*Eumestleta* differs from *Mestleta* in its palpi, the second joint of which is shorter and more densely fringed in front, making it distinctly broader, and in the long fringes to the middle and posterior tibiæ. In pattern it is very similar.

The structure of the legs in "*Thalpochares mundula*" and "*T. latipalpis*" is very dissimilar, and the pattern and coloration more nearly resemble those of many species of *Metachrostis*.

I have to thank Mr. Kirby for assisting me in working out the type of *Thalpocharès*, Led. The case stands thus:—Lederer indicated his genus (Verhandl. zool.-bot. Ver. v., 1855, p. 267), and gave *T. ostrina*, Hüb., and *T. parva*, Hüb., as types. In his subsequent description he included all species previously recorded under *Anthophila* and *Micra*. His first action, nevertheless, must necessarily stand.

Hübner, in his 'Verzeichniss,' p. 256, had already indicated, as types of his genus *Eromene*, *E. ostrina*, Hüb., and *E. parva*, Hüb.; so that the two genera *Thalpocharès* and *Eromene* are absolutely synonymous.

Following *Eromene*, stands Hübner's genus *Trothisa* (types, *T. paula*, Hüb., and *T. minuta*, Hüb.). Lederer observes that "Herrich-Schäffer changes the name to *Trothisa*, Hübner; Hübner's genus *Trothisa* consists, however, only of two species, *paula* and *minuta*; the remaining species are separated by him into several other genera,"—a singular reason for ignoring a genus!

*Thalpocharès*, in its later and extended signification, would fall to *Eublemma*, which precedes both *Porphyrinia* and *Eromene* in Hübner's 'Verzeichniss.'

The only species of *Eublemma* which bears the slightest resemblance to *T. mundula* and *latipalpis* in coloration and pattern is my *E. hypenoides*; but in structure the latter species is very distinct, both the palpi and legs being more slender and quite naked of hairs, whereas in these American species the second joint of the palpus is very broadly fringed, distinctly more so than in *Eumestleta flammicincta*. This would indicate affinity rather to *Microphysa jucunda* than to any species of *Eublemma* (the species of which genus have the palpi either smooth or coarsely scaled, but never distinctly fringed).

The uniform colouring of the secondaries and the conspicuous accessory cell of the primaries sufficiently remove these American species from *Microphysa*, whilst the latter character takes them right away from *Eublemma*, but allies them to *Metachrostis*.

I, therefore, refer these species and the allied "*Pyrallis*" *plumbealis* of Walker to a new genus, which may be called

#### OMMATOCHILA, n. gen.,

Smoky greyish moths, the primaries of which are traversed by a darker angular band, edged with black or brown and white; costal margin beyond this band dotted with white, apical and outer margins bounded internally by a series of ocelloid spots; a pale zigzag submarginal stripe, more or less distinct. Secondaries very uniformly coloured, not banded. General aspect of *Metachrostis*, but with the second joint of the palpi broad and fringed in front; antennæ of males finely ciliated. Type, *O. mundula*, Zell.



## NOTES AND OBSERVATIONS.

NEW SPECIES OF ICHNEUMONIDÆ.—The following two new Ichneumons have been described by Mr. G. C. Bignell, F.E.S., in his address to the members of the Plymouth Institution, and Devon and Cornwall Natural History Society, October 12th, 1893 :—

*Pimpla bridgmanii*, Bignell. Head black; under side of scape of antennæ and palpi, stramineous; antennæ, upper side of thorax and abdomen fuscous, mesothorax darkest; under side, including coxæ, legs, and scutellum, ochraceous; scutellum and adjacent part of mesothorax forming an oblong square patch; hind tibiæ light fuscous, with a ring near the base, and apex dark. Antennæ 25-jointed; length,  $3\frac{1}{2}$  mm.; aculea, 1 mm. Length of body, 5 mm. (excluding aculea); expansion of wings, 9 mm. A parasite on spider, *Drassus lapidicolens*, Walckenaer.

*Praon absinthii*, Bignell. Female: black; mouth and greater part of the abdomen, and terminal joints of tarsi, testaceous; antennæ, third joint wholly, and fourth all but the extreme apex, pectus, legs, apex of the upper side of first segment of abdomen and base of the second, forming an oblong spot, ochraceous. Male: much darker insect; antennæ and pectus black. Antennæ of male with twenty-one joints; female, nineteen. Length, 3 mm.; expansion of wings, 6 mm. A parasite on *Siphonophora absinthii*, Linné; and as figured by Koch, Fig. 272.

NOTES ON THE CELLS OF RETINIA RESINANA.—Being desirous of learning any facts bearing on the secretion of wax by Lepidoptera, I asked my friend Mr. Clark, of Hackney, to forward me some of the curious cells formed by the larva of *R. resinana*, and he has most obligingly complied with my request. These cells are reported to be soft and wax-like in the earlier stages of formation, but in their mature hardened condition they certainly give one the idea of being purely resinous, that is, that they are the result of vegetable exudation, and not of animal secretion. Still, future examination may prove that wax really *does* enter into their composition. In connection with this subject, the following interesting note occurs in an old work (Molina's 'Chili,' vol. i. p. 147):—"In Coquimbo in Chili, resin, either the product of an insect or the consequence of an insect's biting off the buds of a particular species of *Origanum*, is collected in great quantities. The insect in question is a small, smooth, red caterpillar, about half an inch long, which changes into a yellowish moth, with black stripes upon its wings (*Phalæna ceraria*, Molina). Early in spring vast numbers of the caterpillars collect on the branches of the *Chila*, where they form their cells of a kind of soft white wax or resin, in which they undergo their transformations. This wax, which is at first very white, but becomes yellow and finally brown, is collected in autumn by the inhabitants, who boil it in water and make it up into little cakes for the market." This passage is quoted by Kirby and Spence.—H. GUARD KNAGGS; Folkestone, October, 1894.

NOTE ON BOMBYX TRIFOLII.—Besides clover, larvæ of *Bombyx trifolii*, in confinement, will eat walnut, oak, and whitethorn, the last being perhaps the food on which they thrive best. It seems absolutely fatal

to remove the pupæ of this species from their cocoons, or even to open the cocoons; in all cases in which this was done, the wings of the perfect insects failed to expand at all. In this matter it is more sensitive than its relative *B. quercus*, which appears to be but little affected by its treatment in the pupal stage.—D. P. TURNER; 14, Havelock Road, Tonbridge.

FOOD OF *BOMBYX TRIFOLI* LARVA.—In May last I received about a dozen larvæ of the above from a correspondent, and, being the first I ever had, I was very anxious to rear them. I tried them with every kind of clover I could find, but they did not seem to thrive, and I was very much afraid I should lose them. I looked through all my books to try and find out any other food that they would eat. The Rev. J. Seymour St. John's book ('Larvæ Collecting and Breeding') gives broom, but they would not eat that. As a last resource I went into my garden and picked a few leaves off several trees and shrubs, amongst which was willow. On looking into the cage the next morning, every bit of the willow was eaten up; after that I gave them nothing but willow. They fed up well, and I have seven fine specimens. The first emerged on August 1st; the last, on August 22nd. I thought, perhaps, this hint might be of use to some would-be breeders of the above species.—W. E. BUTLER; Hayling House, Reading, Oct. 15th.

*CHARÆAS GRAMINIS* IN SOUTHERN SCOTLAND.—With reference to Mr. Service's article (*ante*, p. 278), I was collecting a few days at the end of July at Moffat, in Dumfriesshire, and found *C. graminis* very abundant on the heads of thistles; but what struck me as being very singular was, that out of ten specimens netted in the evening nine were females. If the percentage of females in certain seasons is anything like this, one can hardly be surprised that larvæ of this species become almost a plague, as the quantity of ova deposited by *C. graminis* is something enormous.—A. ADIE DALGLISH; 21, Princes Street, Pollok-shields, Glasgow, October 1st, 1894.

*CHARÆAS GRAMINIS* IN SWEDEN.—In connection with Mr. Service's interesting article on this insect (*ante*, pp. 278–282), it is worth while to say that there was an "outbreak" of this species in Sweden in 1892, and Mr. Sven Lampa, the economic entomologist of that country, has published an important article upon it in 'Ent. Tidskr.' 1893, pp. 1–47, plate 1.—D. SHARP.

LARVÆ ON MONKSHOOD.—Referring to Mr. W. M. Christy's remarks (*ante*, p. 294) on larvæ feeding on *Aconitum*, I may remark that in August last, I found several larvæ feeding on the above-mentioned plant in my garden; they have now emerged, and are *Phlogophora meticulosa*.—W. E. BUTLER; Hayling House, Reading, October 6th, 1894.

MIMICRY OF *PHLOGOPHORA METICULOSA*.—While walking through Sutton Park this morning, I came across two specimens of *Phlogophora meticulosa* in situations which showed off to the best advantage the large amount of protective colouring this species possesses. One of these moths was a male, the other a female; and although not in any near



proximity to each other, they both occupied similar positions. Both were very rich in colour, the darker parts of the fore wings being of a warm olive-green, while the lighter portions were tinged with faint rosy pink; from their fresh appearance both had evidently only recently emerged. I found them clinging to a clump of mixed bramble and heather, intermingled with bracken-fern. They rested with their fore wings closed longitudinally over the hind ones, but their most striking feature was that the costal margins of the former were again folded downwards, and then bent inwards towards the body, making a sort of irregularly crinkled roll on either side of the insect. These little curled-up rolls, together with the bold scalloping of the wing-margins and the thick plumage of the thorax, when coupled with the rich marblings of the fore wings, gave the moths an almost exact resemblance to withering leaves, which harmonized beautifully with the autumnal tints of the real inanimate leaves among which they rested.—A. J. JOHNSON; Baldmere, Sept. 3rd, 1894.

CURIOUS FORM OF *SPILOSOMA MENTHASTRI*.—I have a specimen of *S. menthastri* in my collection which has a clear brown patch extending over nearly half the area of the right front wing; the veins snow-white, however; the right hind wing, too, is slightly brownish at the hind margin; the antenna on the right side, also, is smaller than its fellow, though perfectly formed. I caught it at light, at Nice (South France), May 28th, 1894. Is the individual in question a hybrid between *S. menthastri* and some other insect; or, how can this condition be accounted for?—FRANK BROMILOW; "Selborne," Poole Road, West Bournemouth, October 1st, 1894.

THE SCARCITY OF *PIERIS BRASSICÆ* IN 1894.—I can fully endorse the remarks of Mr. A. J. Lucas (*ante*, p. 295) respecting the scarcity of this butterfly during the present season. With the exception of what I have reared from last year's pupæ, I do not think that I have seen above a dozen specimens altogether. The same scarcity seems to have also existed on the continent, if a brief tour through France and Switzerland, during the latter part of the summer, can be relied upon as representing the prevailing conditions throughout the season, for I did not see a single specimen of this species in either country, although *Pieris rapæ* was very abundant everywhere.—W. HARCOURT BATH; Birmingham, October 3rd, 1894.

NOTES ON *COLIAS EDUSA* AND THE FLIGHT OF INSECTS.—Referring to Rev. W. Claxton's remarks upon the flight of *Colias edusa* (*ante*, p. 297), I can thoroughly endorse his observation that this species generally flies from east to west. It is an interesting fact, and one which I have often thought worthy of remark. Why is it? The observations of entomologists have also proved that by far a greater percentage of our Heterocera fly from east to west, and in evidence of this I may point out that as a general rule moths are attracted to light more freely when the light faces east; and again the question must be asked—why? And so with the beetle tribe; one finds *Zabrus gibbus* often in numbers along the west side of corn fields in Germany in the evening, the insect which has done considerable injury to corn crops so often; whilst on the east side of the field one will not find a single speci-

men, suggesting that the insect has some preference for the west, and has winged its flight from the east. And, again, I have repeatedly remarked that when the glass of a greenhouse slopes towards the east, several dead specimens of *Dyticus* are to be found in the day; doubtless they have been attracted by the glass they so often mistake for water, whilst winging their flight from east to west. Why, then, is the flight of insects generally from east to west?—R. S. CHOPE.

CALLIMORPHA HERA IN SOUTH DEVON.—In August, 1884, I first met Mr. Brooks at Starcross, who showed me two or three *C. hera* which he had captured in that locality. Mr. Waring, of Starcross, had taken it in some numbers years before then, when a boy. I captured my first few the next season, and during repeated visits to that neighbourhood, year after year, have taken it in great numbers, making it my speciality; and in my frequent notes to the 'Entomologist' have steadfastly defended it against the numerous attacks which threw doubt on its authenticity. It is, therefore, a relief to me to find that at last the species seems to be generally acknowledged as British; whence, and at what date, it first made its appearance in England, like many other species, nobody can tell. I notice that in a recently-published number of a professedly leading work on British Lepidoptera the names of several gentlemen, who have captured *C. hera* in later years, are given as proof of its *bona fides*. This is very satisfactory to me, as those gentlemen obtained their first information about the locality, habits, &c., from me. This season has been a very productive one as regards *C. hera*. I stayed at Starcross during the month of August, and had the pleasure of welcoming Mr. H. Robson, who joined me in the second week; and Mr. Porritt, of Huddersfield, later on. We worked with a will, and started in the usual way, beating the hedges in lanes and roads with good results, although many of the specimens taken were not in cabinet order. With Mr. Robson's excellent reflecting-lamp we tried light, but without success. That *C. hera* comes to light I have ample proof, though the time must be about midnight or after. Mr. Porritt and myself have, however, satisfied ourselves that the first natural flight occurs about dusk, when we saw and took them flying over flowers. As there seems to have been some doubt about this point, I think it is worth recording. With regard to its flight in the sunshine, which question has often been put to me, I must say that in Germany *C. hera* is generally found on the slopes among vineyards and in flowery open spaces in woods, and certainly they are often seen flying in the sunshine and sitting on flowers; but in South Devon the insect inhabits hedges, principally in lanes and main roads. I have only occasionally seen one flying, and have always been inclined to think, owing to its extreme shyness, it must have been disturbed by some vehicle, or even a person walking; or they might have been changing their position to some sunnier spot, where they are nearly always found resting. In former years I have found the yellow var. *lutescens* more prevalent, but this season many more of the normal red ones fell to our nets. The yellow form occurs in light and dark shades; but by far the rarest are the orange or terra-cotta tints, which probably are the progeny of yellow and red parents. The species is very widely distributed in South Devon, and, judging from the number of our captures in the



different parts, seems to be more abundant farther westward than I formerly found it.—J. JÄGER; 180, Kensington Park Road, Notting Hill, Sept. 1894.

EXHIBITION OF TROPICAL LEPIDOPTERA.—The collection of tropical butterflies and moths exhibited by Mr. Wm. Watkins at 21, Piccadilly, was inspected by H.R.H. the Prince of Wales on October 12th. His Royal Highness expressed his surprise at the extraordinary beauty of the specimens, and cordially thanked the exhibitor for the interesting details he gave concerning them.

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### CAPTURES AND FIELD REPORTS.

COLIAS EDUSA IN 1894.—During a stay at Clare, Suffolk, this summer, I saw three specimens of *C. edusa*—a male on Aug. 31st, in a clover-field; another (sex doubtful) on the following day, in the same place; and a male on Sept. 11th, on a rough pasture.—D. P. TURNER; 14, Havelock Road, Tonbridge.

On September 30th, at Dorchester, Oxon, I saw, but failed to secure, a single example of this butterfly. It was a rather small male, very fresh and bright, and of a deeper orange colour than usual.—F. W. LAMBERT; 70, St. Giles, Oxford.

*C. edusa* has been fairly common on the coast, and a few specimens have occurred inland, near Colchester.—W. H. HARWOOD; Colchester.

On Sept. 10th I saw a specimen of *C. edusa* just outside Dulwich Park; on Sept. 19th my brother saw one near Croydon. On April 28th last I found a wing (left primary) of *Lophopteryx carmelita* on a fir tree at West Wickham.—T. B. FLETCHER; 78, Thornlaw Road, West Norwood, Oct. 19.

EARLY OCCURRENCE OF HYBERNIA DEFOLIARIA.—I can give an earlier date for the capture of *H. defoliaria* than that mentioned by Mr. G. S. Robinson (*ante*, p. 205). I took a female specimen on September 8th near Knutsford, Cheshire, and a male the same night in Dunham Park, Bowdon.—LIONEL STONES; Northwood, Seymour Grove, Old Trafford, Manchester, Oct. 10th, 1894. [Mr. W. E. Butler, in 1892, observed this species in the Reading district on Sept. 26th (*Entom.* xxv. 287).—ED.]

PLUSIA MONETA NEAR TUNBRIDGE WELLS.—It may interest some of your readers to know that I have again had the pleasure of breeding *P. moneta*, but I must confess I have not found it nearly so plentiful this season.—M. M. PHIPPS; Victoria Road, Southborough, Sept. 19th, 1894.

ENNOMOS TILIARIA IN SUSSEX.—I should like to note the very unusual manner in which these pretty moths have occurred here this year. They were much more common in August (their proper season) than I have ever seen them before, but I found it very difficult to obtain any good specimens; in fact, they had the appearance of being hibernated insects. But now comes the extraordinary part of my story, for on Sept. 19th (quite three weeks after the first lot had died out) they reappeared in as great abundance as before, and this time in perfect condition. They remained with us until Oct. 5th. I have never seen *Ennomos tiliaria* in such profusion—two or



three on every lamp—while last year I only saw one during the season. Can any of your readers explain the appearance of the second brood, which to me is a complete puzzle?—FRANCIS R. BRUCE; "St. Margarets," Uckfield.

VANESSA C-ALBUM IN KENT.—I had this morning the satisfaction of taking a fine female example of *V. c-album* in my little town garden; our latest dates of its occurrence are in 1887 and 1882, in which latter year no less than seven specimens were captured near Walmer. The insect is very uncommon and sporadic with us, generally appearing in localities apart and at some distance from each other. — SYDNEY WEBB; Maidstone House, Dover, Oct. 13th, 1894.

ACHERONTIA ATROPOS IN SUFFOLK.—Following upon the report of my friend Mr. Pyett's capture of this moth at Toxford, I have the satisfaction of reporting that three larvæ of this species have passed through my hands during September. All came from one garden at Hadleigh, and were handed me by the occupant. He found them all crawling on a path, and had been exhibiting them as curiosities. In captivity they would not touch potato, and appeared to be gradually dying, and one did eventually die, the other two turning to rather undersized chrysalids on the surface of the earth. They are being carefully tended, but their successful turning is a matter of doubt, to be solved in the future. — HARRY C. GRIMWADE; 1, Cromwell Street, Ipswich, Sept. 24th, 1894.

SPHINX CONVULVULI IN SOUTH DEVON.—On the evening of Sept. 29th, whilst walking along by the side of a large bed of *Nicotiana affinis*, I saw two specimens of *S. convulvuli*, but failed to capture either. I determined, however, to visit the same spot each evening at twilight, with the hope of seeing them again, and on Oct. 1st I was successful in taking one at 7.30 p.m., which proved to be a very fine specimen of the male, and measured  $4\frac{3}{4}$  inches across the wings, having the scarlet markings much exaggerated. Is it not rather late for this species to be on the wing? The specimen has been added to the extensive Colby House collection.—R. S. CHOPE.

CALLIDIUM VARIABLE.—Last July I took some thirty-odd examples of this beetle at Wootton, Berks. They varied considerably, both in size and colour, the testaceous form, however, predominating. The majority were taken at rest in the evening on a number of thick oak branches standing in the corner of a farmyard, the remainder being discovered at night on the trunks of apple-trees growing in an adjoining orchard. — F. W. LAMBERT; 70, St. Giles, Oxford.

NOTE ON THE SEASON AT CHICHESTER.—I never remember such a bad season for Lepidoptera as the past. Of butterflies there were almost none, and moths were nearly as scarce. The first *Lycana argiolus* which I saw was on May 1st. A few specimens of *Colias edusa* were noticed in September by a friend. I did not see any myself; this may have been due in a measure to the scarcity of clover this year in the neighbourhood. *Anticlea rubidata*, of which I bred a fine series, first began to appear on May 17th, and continued to emerge during June; the insect in a wild state was much delayed this year. The larvæ of *Acronycta aceris* were fairly abundant in August. Sugar was a complete failure, one or two specimens of *Catocala nupta* being the only decent takes. On Aug. 29th I took

a fine *Luperina cespitis* at light; the lamps also yielding *Hydræcia micacea*, *Ennomos alniaria* (*tiliaria*), (a fine specimen as late as Oct. 5th), *Plusia chrysitis*, *Eubolia cervinaria*, *Cidaria miata*, and a few common Noctuæ—a sorry record.—JOSEPH ANDERSON, Jun.

LEPIDOPTERA AT CLONBROCK, CO. GALWAY.—Although the weather has been unfavourable during this summer, and moths generally scarce, I have obtained some interesting specimens. In the spring, at willow, *Tæniocampa gracilis* was very abundant, especially on dwarf willow (*Salix repens*); on one patch a few yards wide I boxed fifty-four in one night. *T. opima* fairly numerous; Mr. Kane and I took about fifty in all. The moth-trap attracted some fine *Biston hirtaria*, but only one specimen of *Eurymene dolobraria* and *Amphidasys strataria*. Last autumn several *Hybernica rupicaprararia* and *aurantiaria* were taken, which I omitted in the list in the March, May, and June numbers of the 'Entomologist' (*ante*, pp. 88, 169, 190.) *Macroglossa bombyliiformis* was taken for the first time here, flying over *Lychnis*. At sugar some very melanic specimens of *Aplecta nebulosa* and three quite black *Boarmia repandata* were taken flying. The most important additions to the Irish list, as Mr. Kane informs me, are single specimens of *Ophiodes lunaris*, *Xylophasia scolopacina*, *Leucania turca*, and *Stauropus fagi* (smaller and darker than Mr. Kane's two Kerry specimens), and one larva of the same feeding on birch. These were taken by my gamekeeper in my absence between June 1st and Aug. 1st, with many other less important insects; he brought me also the fragments of one *Hepialus sylvanus*, which he informed me had been eaten by a mouse out of a box lying on a shelf. Owing to illness I have been unable to work myself. The following list contains the rarer insects, and those new to this place:—Single specimens of *Nola confusalis*, *Hylophila prasinana*, *Acronycta menyanthidis*, *Asphalia flavicornis*, *Rusina tenebrosa*, and *Agrotis saucia*; five specimens of *Pterostoma palpina*; several *Triphæna orbona*, Hufn. (*subsequa*, Hb.), very ruddy, resembling Scotch insects. On scabious, one *Noctua dahlia*, and one *Cerastis erythrocephala*, resembling the two which Mr. South kindly identified for me as an intermediate form between the type and var. *glabra*; single specimens of *Hecatera chrysozona*, *Xylina socia*, *Asteroscopus sphinx* (male), *Plusia interrogationis*, *Habrostola triplasia*, *Chariclea umbra*, *Pericallia syringaria*, *Tephrosia punctularia*, *Cidaria corylata*. One remarkable *Numeria pulveraria* has the central transverse band of the front wings strongly margined with black. Several specimens of *Epunda lichenea*, *Xylina ornithopus*, *Plusia festucae*, *Bapta temerata*, three *Halia vauaria*, and *Cidaria dotata*, L. (of the latter, Mr. Kane took a perfectly fresh specimen on Oct. 3rd); one *Polia flavicincta* and a specimen of *Xanthia gilvago*. *Cheimatobia boreata* seems to be fairly common here. Larvæ have been very scarce all the year, and are very late, three small *Notodonta dictæoides* being found on Oct. 3rd, while *Acronycta leporina* has not yet pupated. I wish to correct errata in my former list, as *Tæniocampa munda* has not occurred here; and the four specimens I took to be *Hadena contigua* have been identified as *H. dissimilis*.—R. E. DILLON; Clonbrock, Ahascragh, Ireland, Oct. 7th, 1894.

RHOPALOCERA FROM BOURNEMOUTH AND DISTRICT.—Since coming to Bournemouth I have seen or taken the following butterflies, *viz.*:—*Colias edusa* (male), taken by a collector in Branksome Chine, Aug. 31st. *Rhodocera rhamni* (male), seen in the Poole Road, Sept. 2nd. *Thecla rubi*, one



observed in Alum Chine, July 1st. *Polyommatus phlœas*, on downs at Swanage, Isle of Purbeck, Aug. 15th. *Lycæna ægon*, took a male at Canford Hill Estate, near Parkstone (Dorset), July 9th, and found the species abundant among the heather, two days later, on Canford Heath. *L. icarus*, first captured in Alum Chine, Aug. 8th; ab. *cærulea* (female ab.), Talbot Woods, Aug. 18th, one example; it was also abundant in Branksome Chine. The specimens of this last were as fine and brilliant at least as any I have seen in the South of France. *Argynnis paphia*, one torn, on a bramble near Brockenhurst, in the New Forest, Aug. 2nd. *Vanessa urticæ*, one example seen on some thistles in Alum Chine, Aug. 6th. *V. cardui*, observed in Branksome Park, Aug. 16th. *Satyrus semele*, seen close, settled on a pine-tree in Branksome Chine, July 8th; I subsequently captured nine specimens on Canford Heath, July 11th. *Epinephele ianira*, one; same locality and date as last. *E. tithonus*, took an example in Branksome Park, July 18th. *Hesperia thaumas*, Branksome Park, July 18th. *H. comma*, seen on the Canford Hill Estate, July 9th, and captured a specimen ten days later on Canford Heath. — FRANK BROMILOW; "Selborne," Poole Road, West Bournemouth, Sept. 28th, 1894.

TORTRICES AT NORTHWOOD, MIDDLESEX.—In addition to many commoner species of Tortrices, I have taken the following within a radius of one mile and a half from Northwood Station, on the Metropolitan Railway: —*Leptogramma literana*, one example, August, 1891, in a lane by the side of Moor Park. *Ditula semifasciana*, two larvæ in shoots of willow, May, 1894. *Hedya servillana*, one specimen flying over a high willow bush at dusk, June, 1892; I frequently searched for the larva of this species during the spring, but failed to find it. *Sericoris rivulana*, sometimes abundant in a meadow near station now to be let or sold for building purposes. *Orithotania striana*, in rough fields; scarce. *O. branderiana*, larvæ on grey poplar (*Populus canescens*); not common. *Capua favillaceana*, among beech. *Phoxopteryx lactana*, plentiful among birch. There are two forms of this species both equally common; one has the markings somewhat similar to those of *Pædisca bilunana*, whilst the other resembles *Grapholitha ramella*, and is sometimes confounded with that species. *Grapholitha nisella*, a few specimens beaten out of or flying around willow bushes. *G. cinerana*, common and sometimes abundant on trunks of grey poplar; this species is less variable than *G. nisella*. *G. germana*, a few examples flying over high hedges. *Pædisca ophthalmicana*, larvæ often plentiful in rolled leaves of grey poplar. *Catoptria albersana*, one or two specimens captured each year, but rarely in good condition; I have been unable to find the larva, although well acquainted with its method of concealment in the leaves of honeysuckle. *Choreutes myllerana*, about a dozen specimens at honeydew on willows in 1892; I could not discover *Scutellaria galericulata*, the reputed food-plant of the larva of this species, in the district. *Argyrolepis hartmanniana*, a few specimens each year in damp places on the heaths or commons.—RICHARD SOUTH; Macclesfield, Cheshire.

NOTE ON PERONEA COMARIANA.—This species was fairly common during the autumn among *Myrica gale* on the moss, and at the same time *P. comparana* and *P. schalleriana* were beaten from hedgerows around here. Some specimens of the *Myrica* species resemble small examples of *P. comparana*, others are like dwarf *P. schalleriana*, and others again appear to agree, except in the matter of size, with a form of *P. comparana* which I cannot



see differs materially from *P. perplexana*. These resemblances seem to me remarkable, and certainly do not help one to appreciate the special characters which are said to distinguish *comparana* from *schalleriana*, and *perplexana* from both.—RICHARD SOUTH; Oxford Road, Macclesfield.

LEPIDOPTERA AT LIGHT IN SWANSEA DISTRICT.—I was very interested in Mr. E. F. Studd's note about his moth-trap (*ante*, p. 55), as I have used the illuminated trap for the last two years, and have also found it invaluable. My traps (I have two) were placed in a park facing a wood of beech, birch, oak, &c., one on an elevation under a clump of large elms about 150 yards from the wood, the other under a large oak, also on an elevation, about 20 or 30 yards from the wood, and about a quarter of a mile apart from each other. I believe in placing the traps under trees, as the light appears to be stronger when in the shade, and also the branches keep off the morning sun, which is apt to make the moths inside lively, and consequently harder to box. I also put a piece of old matting on top of the trap, hanging over the front a couple of inches; this also keeps the sun off, and some moths prefer to alight on this in preference to going inside, and are found there next morning. A dark night is, of course, necessary, and the less wind the better. On some nights one of the traps would be full, while the other was comparatively empty, which is difficult to account for, as they are both facing the same way. I found that 1892 was a much better year for light than 1893. I only had one trap then, and took nearly as many that year with one as I did last year with two. I started one of my traps about the first week in March, but only took a few *leucophaæria*, *multistrigaria*, *progemmaria*, *rupicaprararia*, and *cruda*, but failed to get the species I set it for, viz., *C. fluviata*, having taken one the autumn before. About the third week in March moths were more plentiful, as *munda*, *rubricosa*, *gracilis*, *instabilis*, *gothica*, *prodromaria*, *opima*, &c., came to it; and by April 7th they were in full swing, taking on that night 1 *abruptaria*, 3 *lobulata*, 2 *prodromaria*, 7 *munda*, 4 *opima*, 2 *rubricosa*, 1 *illumaria*, 1 *nanata*, 1 *spinula*, 4 *gothica*, 1 *instabilis*, 1 *stabilis*, 2 *cruda*, 8 *progemmaria*, 2 *badiata*, 2 *abbreviata*, 1 *exoleta*, 1 *vetusta*, 1 *multistrigaria*, and 2 *æscularia*. From the 7th to the 16th of April the nights were very cold, with occasional frost, so it was useless to light the traps; the 16th produced 1 *biundularia* (black), 1 *crepuscularia*, 1 *chamomilla*, 1 *derivata*, 2 *badiata*, 1 *mendica* (male), 1 *dubitata*, *gothica*, *progemmaria*, &c.; the other insects taken during April being *pumilata*, *petraria*, *silaceata*, *vulgata*, *palumbaria*, *porata*, *dictæoides*, *gracilis*, *suffumata*, *pulveraria*, *falcula*, *punctulata*, *triplasia*, *remutata*, and *confusalis*. May produced, besides those already named, *basilinea*, *lunaria*, *menthastri*, *bidentata*, *trilinea*, *impluviata*, *dodonea*, *pudibunda*, *lactearia*, *decolorata*, *palpina*, *tenebrosa*, *pisi*, *thalassina*, *centaureata*, *lubricipeda*, *capsincola*, *nana*, *B. rubi* (female), *morpheus*, *dolobraria*, *dentina*, *plagiata*, *exclamationis*, *bucephala*, *unidentata*, *russata*, *cinerea*, *festiva* var. *bilinea*, *corylata*, *L. comma*, *pulchellata*, *carpophaga*, *viretata*, *fagi*, *plecta*, *batis*, *lacertula*, *affinitata*, *cucubali*, *ribesaria*, *lariciata*, *propugnata*, *impura*, *ruberata*, *corticea*, and *oleracea*. During June and July (I was away from June 12th to July 8th) I took *lunaria*, *rurea*, *margaritaria*, *notata*, *batis*, *imitaria*, *pulchrina*, *cytisaria*, *pudorina*, *cuculatella*, *alsines*, *graminis*, *spinula*, *illumaria*, *comitata*, *crepuscularia*, *centaureata*, *tiliaria*, and *immanata*, which I consider a very bad record. In August things began to look up a bit, as I consider this one of the best months for light. I did not begin lighting till the 9th, the evenings being unfavourable

up to that time ; but on that date I took *diluta*, *rufa*, *testacea*, *plagiata*, *spinula*, *tenebrosa*, *N. rubi*, *xanthographa*, *ocellata*, *illumaria*, *pumilata*, *russata*, *fluctuata*, *graminis*, *pyramidea*, *brassicæ*, *rumicis*, *H. sylvanus*, *nictitans*, *cespitis*, *palpina*, *micacea*, *falcula*, *erosaria*, and *fulva* ; the other moths taken during the month being *propugnata*, *galiata*, *chrysitis*, *G. flavago*, *cerago*, *ferrugata*, *popularis*, *capsophila*, *unidentata*, *testata*, *variata*, *pallens*, *exanthemaria*, *plecta*, *c-nigrum*, *cubicularis*, and *neglecta*. September produced *popularis silago*, *cespitis*, *lunosa*, and *fulva* : and October only *pennaria*, *dilutata*, and *oxyacanthæ*.—R. B. ROBERTSON ; Coxhorne, near Cheltenham.

DEILEPHILA GALII ON THE EAST COAST.—I am surprised at not seeing any notices of the capture of *D. galii* this year. I took five larvæ, which have changed to pupæ, on the Essex coast ; but, though I spent several days in searching many miles of coast, I could find no more. I thought, however, that other collectors elsewhere had very likely been more fortunate. I saw many places where *Macroglossa stellatarum* and *Charocampa porcellus* had been feeding, but was too late for most of them.—W. H. HARWOOD ; Colchester, Oct. 20th, 1894.

NOTES ON THE SEASON AT COLCHESTER.—The season here has not been a very good one, though a distinct improvement upon last year ; for then, though some species were unusually common, they were also very constant in colour and markings, whereas this year variation has been much more rife. The best insect I obtained was a pale, almost white, *Epinephele tithonus*, in absolutely perfect condition ; this was captured by one of my sons, and we also took a series of other interesting forms of this species. *Argynnis euphrosyne*, too, proved to be worth looking after ; but *A. selene* and *A. adippe* were much scarcer than usual, and very constant, except that some specimens were extremely small. *E. ianira* was extremely variable, and several good bleached and mottled forms turned up. *Zygæna filipendulæ*, which seemed all but extinct last year, was again to be seen in some numbers, though by no means in its usual abundance, and I was fortunate enough to capture five fine pale specimens.—W. H. HARWOOD.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 3rd, 1894.* The Right Honble. Lord WALSHINGHAM, M.A., LL.D., F.R.S., Vice-President, in the chair. Mr. Alick Marshall, of Bexley, Kent, was elected a Fellow of the Society. Mr. W. F. H. Blandford exhibited specimens of a sand-flea, chigoe or nigua, received from Mr. Szigetváry, of the Imperial Maritime Customs, China, who had found them in the ears of sewer-rats trapped at Ningpo. Mr. Blandford stated that the species was allied to, but not identical with, the American species, *Sarcopsylla penetrans*, L., one of the most troublesome pests in Tropical America and the West Indies to man and various domestic and wild animals, the female burrowing into the skin, usually of the feet, but also of any other accessible region. He said that the distribution of the chigoe was recorded over Tropical America and the Antilles from 30° N. to 30° S., and of late years it had established itself in Angola, Loango,



and the Congo. Colonel Swinhoe, Mr. McLachlan, Lord Walsingham, Mr. Champion, Mr. J. J. Walker, Mr. Barrett, and others took part in the discussion which ensued. Mr. F. C. Adams exhibited a specimen of *Mallota cristaloides*, a species of Diptera new to Britain, taken by himself in the New Forest on the 20th July last. He said that the species had been identified by Mr. Austen, of the British Museum, and that he had presented the specimen to the National Collection. Mr. Verrall made some remarks on the species and on the distribution of several allied species in the United Kingdom. Lord Walsingham, as a Trustee of the British Museum, expressed his satisfaction at the presentation of the specimen to that Institution. Mr. Tutt exhibited specimens of a form of *Zygana exulans*, well scaled, and with the nervures and fore legs of a decidedly orange colour, collected during the last week in July by Dr. Chapman in the La Grave district of the Alps, at a considerable elevation; also specimens of the same species taken by Dr. Chapman near Cogne, and others from the Grauson Valley, the females of which were less densely scaled. He also exhibited Scotch specimens for comparison, and stated that he was of opinion that the latter were probably as densely scaled as the continental ones, but that, owing to the differences in the climate of Scotland and Switzerland, collectors had fewer opportunities of getting the Scotch specimens in good condition. Mr. P. M. Bright exhibited a remarkable series of varieties of *Arctia menthastri* from N. Scotland, also series of *Liparis monacha* (including dark vars.), *Boarmia roboraria* and *Tortrix picearia*, from the New Forest; *Zygana exulans* from Braemar; *Noctua glareaea* from Montrose and the Shetlands; *Agrotis pyrophila* from the Isle of Portland, and Pitcairle, N.B.; red varieties of *Teniacampa gracilis*; and a specimen of *Sterrhia sacraria*, taken at light, at Mudeford, in October, 1893; also living larvæ of *Eulepia cribrum*. Mr. J. J. Walker exhibited a living specimen of a large species of *Pulex*, which he believed to be *Hystriopsylla talpæ*, Curtis, taken at Hartlip, Kent. Mr. Verrall and the Chairman made some remarks on this and allied species. Mr. K. J. Morton communicated a paper entitled "Palæarctic Nemouræ." Lord Walsingham read a paper entitled "A Catalogue of the Pterophoridae, Tortricidae, and Tineidae of the Madeira Islands, with Notes and Descriptions of New Species." In this paper sixty-six species of Lepidoptera belonging to these families were recorded as occurring in the Madeiras, of which thirty were noticed as peculiar to the Islands, twelve as common to the Madeiras and Canaries (of which two were not known as occurring elsewhere), and one extends its range only to North Africa. Over thirty species were added to the list, and one new genus, seven new species, and two new varieties were described. Mr. Jacoby and Mr. Bethune-Baker made some remarks on the species and their geographical distribution. Mr. Blandford read a paper entitled "A Supplementary Note on the Scolytidae of Japan, with a list of Species."—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—September 27th. E. Step, Esq., President, in the chair. Mr. Auld exhibited a larva of *Phorodesma smaragdaria*, Fb., which had been feeding fourteen months. Mr. Jäger exhibited the series of *Callimorpha hera*, L., taken by him in S. Devon this year, while accompanied by

Messrs. H. Robson and G. T. Porritt. The red, yellow, and terracotta forms were all represented. Mr. Winkley, two specimens of a second brood of *Smerinthus populi*, L., bred this year. Mr. Filer, long series of bred *Papilio machaon*, L., from Cambridge, one specimen having the marginal band of the hind wing extended so as to unite with the discoidal spot. Mr. H. Moore, a specimen of *Vanessa urticae*, L., from Vienna, having the two spots only represented by a few dark scales. Mr. Williams, a specimen of the intestinal worm, *Gordius aquaticus*, which had emerged from the body of a water spider. Mr. A. Hall, about twenty species of Rhopalocera from Japan, identical or almost identical with British species, including *Papilio machaon*, L., *Leucophasia sinapis*, L., *Gonopteryx rhamni*, L., &c. Mr. T. W. Hall, a long series of *Melanippe fluctuata*, L., from Perth, one being ochreous, many dark, and several were var. *neapolisata*. Mr. Adkin, *Zygæna exulans*, Hock., from Braemar; *Sesia scoliiformis*, Bork., from Rannoch; light and dark forms of *Abraxas grossulariata*, L., and grey forms of *Melanippe fluctuata*, L., from Aberdeen. Mr. West (Greenwich), on behalf of Mr. Tugwell, a large number of *Zygæna exulans*, Hoch., taken this year at Braemar, with cocoons *in situ* on crowberry. Mr. Tutt made some very interesting remarks on the different climatal conditions which the same species of Lepidoptera experienced in the High Alps and in our own country, and noted various modifications of habits resulting therefrom.

October 11th.—The President in the chair. Mr. E. H. Trenerry, of Clapham Park, was elected a member. Mr. Oldham exhibited, from his garden at Woodford, a very varied series of *Triphæna pronuba*, L., series of *T. orbona*, Hufn., and a few *Plusia gamma*, L. Mr. R. Adkin, on behalf of Mr. South, series of *Pædisca sordidana*, Hb., *Peronea hastiana*, L., *P. comparana*, Hb., *P. comariana*, Zell., and *P. schalleriana*, L., from Macclesfield, and read notes (a long discussion took place on the perplexities in differentiating the last three species); on behalf of Rev. J. G. Greene, a series of well-executed coloured drawings of the most striking vars. of *Abraxas grossulariata*, L., bred by him during the last few years, and read notes; and on behalf of himself, series of *Acronycta rumicis*, L., from many localities, and a bred series of *Eupithecia jasideata*, Crewe, from Ireland, and read notes. Mr. Mansbridge, long varied series of *A. grossulariata* and *A. sylvata*, from Yorkshire, and contributed notes. Mr. H. Moore, a female *Lycena corydon*, Fb., with male coloration, and specimens of *Bombyx quercus*, L., *Catocala nupta*, L., and *Ocnèria dispar*, L., with a batch of ova of the last species, all from France. A long discussion on *O. dispar* ensued. Mr. McArthur, series of *Toxocampa cracca*, Fb., *Noctua glareosa*, Esp., *Acronycta rumicis*, L., and *Agrotis agathina*, Dup., all from N. Devon. Mr. C. A. Briggs exhibited types of *Plusia ni*, Hb. Mr. Tutt, a narrow-winged specimen of *Eupithecia subnotata*, Hb., *Agrotis ripæ*, Hb., from St. Anne's-on-Sea, and two specimens of *Eupithecia subfulvata*, Haw., var. *oxydata*, Tr. Mr. Fenn, series of *Cirrhædia xerampelina*, Hb., from the Isle of Man, and series or examples of *Aporophylla australis*, Gn., *Epunda lutulenta*, Bork., *E. lichenea*, Hb., *Anchocelis lunosa*, Haw., *Calocampa vetusta*, Hb., and *Xylina semibrunnea*, Haw., all from Deal. Mr. Tugwell and Mr. Tutt exhibited a large number of Scotch and Swiss specimens of *Zygæna*



*exulans*, Hoch., and contributed papers thereon. A considerable discussion ensued.—HY. J. TURNER, *Hon. Report Secretary*.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—September 17th, 1894.—Mr. G. H. Kenrick, F.E.S., President, in the chair. Mr. Valentine Smith, Wellington Road, Edgbaston, was elected a member of the Society. Exhibits:—Messrs. R. C. Bradley and C. J. Wainwright, a collection of insects made during ten days spent in the New Forest in the middle of July this year; the Lepidoptera included freshly emerged specimens of *Lithosia mesomella* and *Erastria fasciana*, which were thus a full month late; also *Cleora glabraria*, *Calligenia miniata*, &c.; eleven species of dragonflies; and a number of Aculeate-Hymenoptera, including *Ammophila sabulosa*, *Crabro vagus*, and *cribrarius*, &c.; but the chief part of the collection consisted of Diptera—*Alophora hemiptera* and *Echinomyia grossa* in good series, one specimen of *E. lurida*, also *Myiolepta luteola*, *Laphria marginata*, *Dioctria reinhardi*, *D. flavipes*, *Limnobia bifasciata*, and many others not yet fully identified, including one *Dicranomyia* taken by Mr. Bradley, belonging probably to an undescribed species. Mr. E. C. Rossiter, a fine collection of Lepidoptera taken during a month's collecting in July at Brockenhurst, including *Triphæna subseque*, *Cleora glabraria* and *lichenaria*, *Macaria alternata*, and long series of the species more usually met with. Mr. R. G. B. Chase and Mr. W. Harrison, New Forest captures; the former, series (bred this year) of *Limenitis sibylla*, *Apatura iris*, &c.; and the latter, insects captured in former years, including *Selidosema plumaria*. Mr. E. C. Rossiter, *Asthena blomeri*, *Cymatophora fluctuosa*, &c., from Arley, and a series of *Hepialus vellea* from Clent, where he said it had occurred more freely than usual this year, but the specimens were much smaller. Last year he took only a few, but much larger. Mr. C. F. Haines, insects taken thirty years ago by his father, including *Cymatophora octogesima*, from Bewdley.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October 8th, 1894 (opening meeting of the winter session). Mr. S. J. Capper, F.L.S., F.E.S., in the chair. Mr. C. S. Gregson stated that *Orgyia fascelina*, which he supposed had been exterminated from the sandhills, was in profusion at Formby in the larval state. Mr. Percy Bright, of Bournemouth, made some interesting remarks on a case of Lepidoptera which he had collected and brought with him for exhibition, including a series of a smoky form of *Spilosoma menthastris* from the North of Scotland, fine series of *Zygæna exulans* and *Crambus furcattellus* taken by himself this year at Braemar, *Sesia scoliiformis* from Rannoch, *Crambus myellus*, dark forms of *Liparis monacha* from the New Forest, and *Tortrix picearia* from the same locality, a dark well-marked specimen of *Noctua glareosa* from Montrose, and a chalky variety of *Syrichthus alveolus* from the New Forest. Mr. F. N. Pierce read a short note respecting the genitalia of two specimens of *Bombyx quercus*. During the evening the President exhibited a fine series of *Calymnia trapezina*. Mr. Gregson, specimens of *Lithosia sericea*, taken by himself this year, *Melanippe hastata* var. *hastulata* from Sutherlandshire, and varieties of *Arctia caia*, bred by himself this year. Mr. C. E. Stott, on behalf of Mr. H. S. Clark, of the Isle of Man, two specimens of *Sphinx pinastri*.—F. N. PIERCE, *Hon. Sec.*

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A VARIETY OF *ARGYNNIS AGLAIA*, L.

By BORIS N. MENSHOOTKIN.



Among the Lepidoptera captured this year near Louga (Government of St. Petersburg) was a variety of *A. aglaia* which seems to me to be quite new. I had the good fortune to take it on the 18th of July. The form perhaps also occurs in other places, but so far I have not found a description of it anywhere.

In general appearance it is very striking, the specimen being almost entirely black, as will be seen from the accompanying figure. The specimen was quite fresh, and appeared to have only shortly left the pupa; it is now in the University's collections. The following is a description:—

Upper surface:—Fore wings are coloured as in ordinary *A. aglaia*; black spots, except in the discoidal cell, are not individually to be seen. The marginal line is very thick, and represents a black band rather than a line; the light spaces between the marginal line and so-called "marginal lunules" are absent, and the lunules themselves and the marginal line have merged together; therefore giving the latter the aspect of a band. In the submarginal area a broad black belt occupies all the space between the marginal and submarginal rows of black



dots of the ordinary *A. aglaia*. The base of the fore wings has a deeper colour than the other brown parts of the wings. In the discoidal cell the spots number three; the first (counting from the base) is of ordinary form; the typical second and third have merged together, forming a large, black, irregular spot; between the first and second the yellowish ground colour forms a capital L; the last (third in the variety) is larger than it ought to be, and is somewhat like the capital letter B. The nervules in the marginal area are black, and very broad as compared with the basal part, where they are of just the same aspect as in the typical specimens.

Hind wings—Marginal area:—The marginal line and the lunules are typical; but the marginal row of dots fails altogether, or is merged with the broad black belt; compared with the figure of *A. aglaia* var. as described by Mr. Fowler,\* it will be seen that the pale spots of my variety are exactly in the places of the "seven broad black bars" of the secondaries of his variety. The whole of the submarginal area one broad black band; the nervules that traverse it are much paler than the general colour, and therefore easily seen; the same with the marginal area, where they are encased in broad black lines. The black spot near the base of the wing has not the typical prolongation, and is on the whole much smaller; being surrounded by black it is not very distinct. The base is almost entirely black.

The under surface differs as much as the upper from that of the typical *A. aglaia*. Fore wings:—Marginal area without black spots, with only four pale yellow round dots and two long silvery bars at the tip of the wing, corresponding to the two long pale spots (fifth and sixth) of the marginal area of the upper surface. The submarginal area has two rows of black spots; the row nearest to the base is formed by six large and broad spots, about twice as large as the typical ones; the outside row by four spots, of elongated form, except the last, which is round. The discoidal cell has only three spots,—first small, second and third merged together, fourth like capital B, of exactly the same form as on the upper surface. Nervules typical.

The hind wings have in all only eleven silvery spots, instead of the typical twenty-one. The marginal area has distinct marginal lunules and seven spots, which have a little silver in them, and are horse-shoed on the marginal side with black. The last spot is elongated, silvery, and surrounded by a black border. The submarginal area is utterly devoid of silver spots; in place of them are spots of a reddish brown hue, seven in number; they are represented on the figure as darker than the ground colour, which is typical. The basal area has only four large silver spots, just like the var. *charlotta*. Nervules distinctly seen.

\* *Ante*, p. 181, and fig. on p. 182.

As will be remarked, this variety has the following particular in common with the variety of *A. selene*, previously described by me (*ante*, p. 183): both have much more black than the typical forms. As black absorbs more heat, may not this be a device to keep the Lepidoptera warm in our cold climate?

St. Petersburg University, August 13th, 1894.

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## THE NORTH AMERICAN SPECIES OF *INGURA*.

By JOHN B. SMITH, Sc.D.

To the notes given by Mr. Butler in the 'Entomologist' for Oct. 1894 (p. 282), I have nothing to add in the way of criticism, and only a few words in explanation. At the time I examined the collection there were arranged of the Noctuidæ nine cabinets of twenty drawers each, and in cabinet 10 there were two drawers completed; making in all 182 boxes looked over, more or less carefully. My notes on this part of the collection refer to the number of the cabinet and drawer in which the species annotated were found; and after "Cab. 10, Box 2," I find—"Thus far the collection was arranged." Beyond this point my notes show a constant reference from the Grote boxes to the Museum drawers, and the *Plusiini* were the first to be examined of the unarranged material. In the Grote boxes I found his collection of *Ingura* intact, and I noted the presence of five species, among them the type of *flabella*. This series, then, was certainly not incorporated with the remainder of the Museum material.

After I had been over the entire series of Noctuid boxes, I made in my note-book a list of all the names of the Walker species which I had not then found, to serve as a guide for further search; and in this list I find *I. fuscescens* and *I. producta*. My book then shows that I looked over the Bombycid series, finding a number of species of interest as I proceeded; but here I kept no memorandum of cabinet or drawer number. Among these somewhat random notes I find the references of *I. producta* to *abrostoloides*, and of *I. fuscescens* to *I. præpilata*. Concerning *Edema fuscescens*, which is, as Mr. Butler says, described from Honduras, it was referred to by Messrs. Grote and Robinson as an *Ingura*, and so came upon my list. I have no note of the locality of the specimen seen by me, and no special comment on the species, except that it equals *præpilata*. I did not see *I. cristatrix*, and probably, therefore, not the real type of *fuscescens* if the two were associated. It is pleasant to learn that *cristatrix* can be dropped from our list, and I am quite convinced that Mr. Butler is right about *pygmæa*. In other words, I accept Mr. Butler's conclusions in this genus.



ON A *LECANIUM* FROM ROCHESTER, N.Y. (U.S.A.), CONSIDERED IDENTICAL WITH *L. JUGLANDIS*, BOUCHÉ.

By T. D. A. COCKERELL.

Entomologist of the New Mexico Agricultural Experiment Station.

ABOUT fifty years ago, Bouché, who was Director of the Botanic Garden at Berlin, described various Coccidæ which came under his observation. One of these, which occurred in Germany on *Juglans nigra* and *J. regia*, is the above-mentioned *Lecanium juglandis*. Signoret, in his famous 'Essai,' was obliged to quote Bouché's description, never having met with the species himself. He remarked, however, that he thought *L. juglandifex* of Fitch, though American, was the same species.

Turning now to Fitch's writings, we find, in the Trans. N. Y. Agr. Soc. for 1856, p. 463, a description of *Lecanium juglandifex*, n. sp., the Butternut scale-insect. A comparison of this description with that of Bouché, as quoted by Signoret, seems convincing as to the identity. I will give the characters cited in parallel columns, using for *juglandis* a translation written by my wife:—

*L. juglandis*, Bouché.

♀ oblong, convex, of a grey-brown with yellow bands, and the dorsal line yellow. Length 2 lines. This cochineal much resembles *L. persicæ*, but it is still larger. The females end by becoming formless, with much elevation, and are 2-3 lines in diameter.

[♂] pupa is oblong, depressed, whitish, a little striated.

♂ of a deep reddish brown, with blackish head, the wings whitish, the anterior edge red, shaded as far as the first nerves, the tails white. Length  $\frac{3}{4}$  line. The antennæ of the male have knotty hairs at the extremity.

*L. juglandifex*, Fitch.

[♀] Hemispheric, dull yellowish or black, about 0.22 long and 0.18 broad, notched at hind end, frequently with paler stripe along middle, and paler margin with transverse blackish bands.

♂ pupæ are oblong oval, moderately elevated white scales about 0.10 long and half as broad, thin and somewhat hyaline, with a slender snow-white line running lengthwise along each side of the middle, and uniting posteriorly, with a similar line transversely across the scale half-way between middle and hind end.

♂ rusty reddish, thorax darker, scutel and head blackish, neck narrowly pale red. Antennæ 8-jointed [error, no doubt, for 10]. Wings transparent but not glassy, vein reddish.

Looking through the 'Zoological Record,' I find *L. juglandis* mentioned in 1873 (Signoret's paper), and again in 1884. It is

also recorded from New Jersey in Prof. J. B. Smith's catalogue of the insects of that State. *L. juglandifex* is treated of in Packard's great work on Forest Insects, p. 338.

So much for the published information; now we may turn to the specimens.

A few weeks ago Dr. Lintner sent me specimens of a *Lecanium* thickly infesting a twig of plum. These were from Rochester, N.Y., and the insect was there causing some alarm. The species was new to me, but I came to the conclusion that it could be none other than *L. juglandis*, Bouché (*juglandifex*, Fitch). As remarked by Bouché, it much resembles *L. persicæ*, but it may be very easily distinguished at sight, *if living*, by the markings of the immature female scale, which are as indicated by Bouché in his description. The transverse yellow and blackish bands alternate, so that there is no contradiction between the statements of Bouché and Fitch—the one simply taking the dark, the other the light, as the ground-colour. The individuals vary considerably, and only one here and there is marked as plainly as Bouché describes.

The mature female, as Bouché says, becomes swollen, and loses the colour bands.

The male I did not see, but it will be observed that the two accounts given of it agree sufficiently well.

I wrote to Dr. Lintner explaining how the matter stood, and suggesting that greater certainty might be aimed at, if the type of Fitch's description could be found and examined. He very kindly replied at once by sending me Fitch's type, which was in his care, for study.

On first glancing at this scale, I thought it must surely be different from the Rochester species after all. It is 5 mm. long, rather more than 4 broad, and  $2\frac{1}{2}$  high. There is a short posterior notch with contiguous sides, as usual in the genus; but the *anterior* margin presents a deep wide notch, very much wider and deeper than is seen in any of the Rochester scales. The scale is of a red-brown colour, not at all blackish, with three strong dorsal keels, converging posteriorly; and joined at their anterior ends, and again about their middle, by strong transverse ridges. The transverse keels do not extend down the sides, which, however, are strongly rugose-plicate, with pits. The surface of the scale is shiny.

It will be at once seen that this type differs as much from Fitch's description as from the Rochester scales; but the anomaly was explained when, on looking again at the latter specimens, I saw them in their dead and shrivelled condition. The mature females do not alter in shape after death, but all those not mature lose their coloured markings, and become greatly changed in appearance. The shrivelling takes place somewhat differently in different specimens, but I was able to



find one which showed the three dorsal keels just as in Fitch's type. The broad anterior notch I did not match, but probably, among a number, some would be found presenting the same character, which is undoubtedly due mainly to contraction in drying. Therefore, having these facts in view, the Fitch specimen may be said to confirm the opinion that it and the Rochester species are the same. It should be stated, however, that none of the immature females from Rochester are so large as Fitch's type.

The occurrence of this *Juglans* scale on plum has its parallel in the case of *Aspidistius juglans-regiæ*, Comst., which has lately been detected on plum and other fruit trees. The parallel is more complete from the fact that *A. juglans-regiæ* seems also to have been described from Europe as *A. juglandis*, Colvée. The probability seems to be that *L. juglandis* is a native of America, but this is very far from proven. It will be remembered that Signoret failed to find it in France.

In order to render the identification of the species somewhat more certain in the future, I have noted the following microscopical characters:—

*L. juglandis* on plum from Rochester. Antennæ shorter than their distance from the margin, seven-jointed, 3 much longest, then 4; formula 34 (71) 2 (56). I have bracketed 1 as equal to 7, but it is perhaps hardly so long. 1 with a hair; 2 with two long hairs; 3 apparently hairless; 4 with two long hairs and one short one near its distal end; 5 and 6 each with a hair; 7 with about eight long hairs. Legs slender; coxa with three hairs at distal end, two on outer, one on inner side; trochanter with a very long hair; femur about as long as tibia; tarsus about two-thirds length of tibia; claw nearly straight; a very long tarsal knobbed hair, with the knob almost obsolete; digitules slender and hair-like. Margin with very small spines. Stigmatal spines in pairs, rather small. Derm not tessellate, but with scattered gland-spots. Rostral loop short. Anal ring with six stout hairs.

The above was written on June 7th. Since then, the MS. has been sent to Messrs. L. O. Howard, of Washington, and M. V. Slingerland, of Ithaca, N.Y., who had interested themselves in the matter. Some discussion and doubt has arisen regarding the identification of the scale, notwithstanding the facts above set forth, and consequently a few further observations appear to be necessary.

Mr. Howard remarks that he cannot distinguish the Rochester scales from specimens of *L. persicæ*, which had been received from Mr. Newstead. Bouché himself did not fail to note the great resemblance of *L. juglandis* to *L. persicæ*, as above quoted; and I quite expect that if Dr. Lintner had not sent me good fresh material, I should have replied to him that the insect was appa-

rently *persicæ*. While the possibility exists that *juglandis* and *persicæ* are but forms of one species, I think that with present information we must hold them distinct. In the Rochester *juglandis* I found the antennæ but seven-jointed; whereas Signoret gives *persicæ* as having eight joints. Otherwise the antennæ of the two forms are very much alike.

It may be added here, that the antennæ of Fitch's *juglandifex* are likewise seven-jointed, a circumstance which favours the belief that *juglandifex* and the Rochester *juglandis* are the same. This was not stated in Fitch's description, and could not be ascertained from Fitch's type, but appears in specimens found on butternut in New York State, sent by Mr. Slingerland. Mr. Joseph F. Bennett, one of my students, made a careful examination of these specimens, and has drawn up a description. The antennæ are as described above for *juglandis* in all essential particulars, but the fourth joint is possibly not quite so long, so that Mr. Bennett writes the formula 3 (47) 21 (56). The formula also shows 2 somewhat longer than 1, but this results from the position of the segments, as may be seen from the drawing accompanying the description. Practically, one may say that the antennæ of the butternut form (*juglandifex*) and of the Rochester *juglandis* are identical in character.

Another difficulty of quite a different kind has arisen. Mr. Slingerland has very kindly sent me a copy of a paper, by Rudolph Goethe, which I had not seen. In this paper (in *Jahrbücher d. Nass. V. f. N.*, 37) the author describes several species of *Leucanium*, including one found on *Juglans*, which he considers to be *L. juglandis*, Bouché. Mr. Slingerland observes that neither the description nor the figure tallies with the Rochester species, and in this I can entirely agree with him. Goethe's *juglandis* is a large species, shaped almost like a *Kermes*, and appears to be allied to *L. tilia*, *L. æsculi*, &c. Whether it is a known species on a new food-plant, or a new species altogether, the description scarcely permits one to decide; but that it is true *juglandis* of Bouché I cannot bring myself to believe. I do not suppose that Bouché's types are still in existence, and, failing these, we must necessarily demand that a species identified as *juglandis* shall agree with his description, which Goethe's scale by no means does.

Goethe goes on to describe *L. persicæ*, but differentiates from it, a few pages further on, a supposed new species, which he calls *L. variegatum*. This species, found on plum, is, to judge from the particulars given and a characteristic figure, none other than our Rochester *juglandis*! Thus we have evidence that this scale, newly found on plum in America, has infested it for at least ten years in Central Europe, Goethe's paper dating from 1884.

To finally sum up, I have to say that it still appears to me that the Rochester scale is *Leucanium juglandis*, Bouché, of



which *juglandifex*, Fitch, and *variegatum*, Goethe, are synonyms. This conclusion is not to be considered certain, but simply as favoured by the balance of evidence. Those who disagree have several courses open to them; they can use Goethe's name, *variegatum*, or either *variegatum*, *juglandifex*, or *juglandis* can be used in a varietal sense under *L. persicæ*.

September 24th, 1894.

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## NOTES ON "ASSEMBLING," WITH SOME GENERAL REMARKS ON THE SENSES IN LEPIDOPTERA.

By J. ARKLE.

THAT butterflies and moths possess a keen sight needs no demonstration; but what evidence is there of the sense of hearing? As far as can be seen they possess no organ for the exercise of the faculty. Sound neither alarms nor produces upon them the slightest impression. A butterfly or moth evades its captor by the sense of sight, not by that of hearing. The report of a gun disturbs birds and other animals but not Lepidoptera. Not only are they insensible to sound, but they are in themselves voiceless. The death's-head moth (*Acherontia atropos*) has been credited with a phenomenal squeak, *Neuronia popularis* with a "clicking noise" in flight; the wings of certain species set up a vibratory hum; but there is no response in a sense of hearing, and the insects live in what is to them a soundless world.

If, however, the sense of hearing be absent, that of touch is certainly present. Whatever other faculty the antennæ may possess, these organs are unmistakable "feelers." Any one who has watched the little bronze-green *Adeta viridella* using its long antennæ in a birch-bush on a sunny day, will be convinced that a discriminating touch is centred in these appendages. Antennæ are varied in dimension and design, but surely to meet the habits of each particular species. And so, in contrast to the example quoted, those of *Hepialus humuli* are short, to fit with an experience close to the roots of thick, low-growing plants. To butterflies and certain moths "clubbed" antennæ are best suited in dealing with surfaces, as petals and leaves.

That Lepidoptera generally possess the faculty of taste is as evident as that they possess sight. But in some species, appearing early in the year, as, for example, *Nyssia hispidaria*, the proboscis is wanting and the sense probably withheld. As imagines they precede the flowers, and seem to pass their short lives without food at all.

Smell.—In animal organisms the gift of scent is exercised through the respiratory process. Lepidoptera possess this

faculty beyond doubt; and, as the air inhaled is the carrying medium, we must look to the spiracles as the organs of smell. In some moths, especially Bombyces and Noctuas, the sense is extraordinarily developed. For instance, "sugar" can be found by the "owl-moths" in the darkest nights. Geometers fly more in the dusk; the flight of butterflies is by day. Neither are therefore conspicuous at sugar. And, if we except species such as *Amphidasys strataria* (*prodromaria*), geometers agree with butterflies in having the sense of smell less developed than, for example, Bombyces. There is nothing extraordinary in this; it is a provision in Nature with which we are familiar. For instance, the greyhound courses by sight; the foxhound by scent. Let us now apply these observations to what is termed "assembling."

When I met Mr. Murray, of Carnforth, last July, he told me he had put three *Bombyx quercus* (females), each confined in a small cage of perforated zinc, into the leather satchel he usually carries when on entomological expeditions. This was on July 19th. In the afternoon of the same day "assembling" was tried on Witherslack Moss. It was late, about five o'clock, a dull day, and, as we afterwards found, few males of the species were out of the chrysalis. Two, however, were attracted and captured. On the morning of the 20th Mr. Murray removed the females from the satchel, and took the satchel with him to the Isle of Man. He returned from the island on the 23rd. On the 24th he again visited Witherslack Moss, and, although no *B. quercus* had been in or near the satchel since the 20th, numbers of males not only came to it but crept inside. The 26th was the date of our visit to Clougha Pike (Entom., ante 303), and Mr. Murray then acquainted me with these particulars. His experience was thoroughly corroborated on the occasion of our visit to the Pike; but the species there was nearly over; the males were rubbed, chipped, experienced, and shy. On the 27th we all went to Witherslack Moss, and it was a sight to see the males of *B. quercus*, all in good condition, trooping up against the breeze to the satchel. Again, on the 29th, two fine males came to it, on the high road, by Halton Moss. I took the first—no difficult matter, as satchel and moth were within arm's reach. The second we watched running about and into the bag as we sat at lunch by the well, until we finally chased it away. Lastly, males assembled to the satchel, in a similar manner, on the 31st. Summing up then,—three female *B. quercus*, each in a cage of perforated zinc, were placed in a leather bag on July 19th. On the 20th they were taken out. The bag had a sea trip, but males continued to assemble to it for twelve days afterwards! Clearly this history proves two things:—That Lepidoptera possess the sense of smell; and that some species, at any rate, depend on this sense in "assembling." They are the



foxhounds, as it were, in Lepidoptera; they course by scent, as, undoubtedly, butterflies and many Geometers find their mates by sight.

It has been suggested that these insects possess an "additional sense," and that its seat is, probably, the "feathered antennæ." But assembling is evidently habitual in species without these very antennæ (Entom. xxv. 84, 121, 163, 218). It is much more likely that pectinated antennæ are necessary under special circumstances affecting the sense of touch. There is no evidence in favour of an additional sense existing; there is no organ we can point to for its exercise; there is, in short, no need for it.

These remarks are laid before the reader without any claim to infallibility. There are puzzles insoluble throughout Nature; so will there be in insect mechanism. But a generous field has been left for useful research, and it is well we should seek to know more about the things around us than that they are possible results of chance.

Chester, October 31st, 1894.

## A NEW CLASSIFICATION OF THE GENUS *PERGA*, LEACH.

BY JOHN W. SHIPP.

IN a paper published in the 'Entomologist' (vol. xxvi. p. 263), I gave a list of specimens belonging to the above genus, which are in the Hope Collection at Oxford. Kirby (List Hym. i. 1882) gives a list of species in the British Museum, including no less than forty-six known forms. This has been further augmented to fifty-one, the species since added being *chalybea*, Froggatt; *sericea*, Kirb.; *sellata*, Kirb.; *lalage*, Kirb.; and *divariata*, Kirb. The most natural classification of the genus is as follows:—

### I. Antennæ 6-jointed.

- i. Antennæ shortish, longer than head, joints 3-5 of equal length, not remarkably short.

#### A. Species furnished with four submarginal cells in anterior wings.

- a. Species with the 2nd recurrent nervure confluent with the radial nervure between the 2nd and 3rd submarginal cells . . . *ACANTHOPERGA*, n. g.

- b. Second recurrent nervure not confluent, but joining the cubital nervure between the 2nd and 3rd cubital transverse nervures . . . . *PERGA*, Leach.

- B. Species furnished with three submarginal cells in anterior wings . . . . . PSEUDOPERGA, Guérin.
- II. Antennæ very short, hardly, if at all, extending past eyes; joints 3-5 so short that the club appears to spring almost immediately from the antennal tubercle; hind femora more or less swollen.
- A. Species having three submarginal cells in anterior wings, at least in the males . . . . . PERGADOPSIS, n. g.
- B. Species having four submarginal cells in anterior wings . . . . . CAMPTOPERGA, n. g.
- II. Antennæ seven-jointed, with a gradually formed club.
- I. Species having three submarginal cells in fore wings . . . . . PLAGIOPERGA, n. g.
- II. Species having four submarginal cells in fore wings . . . . . XYLOPERGA, n. g.

## ACANTHOPERGA, mihi.

*cameroni* (type). Westwood, P. Z. S., 1880, p. 367, pl. xxxvii. fig. 3; Kirby, List Hym. i. p. 24, 1882; Shipp, Ent. xxvi. p. 265, 1893.

Hab. Australia.

## PERGA, Leach.

Zool. Misc. iii. p. 115, 1817.

*dorsalis* (type). Leach, Zool. Misc. iii. p. 117, n. 4, pl. cxlviii. f. 1; Westw., P. Z. S., 1880, p. 362; Kirby, List Hym. i. p. 18, pl. i. figs. 11, 12; Froggatt (larv), P. Linn. Soc., N.S.W. (2) v. p. 284; Shipp, Ent. xxvi. p. 265.

*scutellata* ♀, Westw., Griff. An. Kingd. xv. p. 402, pl. lxvi. f. 2, 1832; Brullé, Hist. Nat. Ins. Hym. iv. pl. 48, f. 1, p. 674; Guérin (del), Icon. du Règne Anim. Ins. pl. 64, f. 2.

*eucalypti*, Bennett and Scott, P. Z. S., 1859, p. 209, pl. 62; Kirby, List Hym. i. p. 20.

Hab. Australia; New S. Wales; Queensland; Tasmania.

## PSEUDOPERGA, Guérin.

Icon. du Règne Anim. Ins., teste, p. 395.

*lewisii* (type), Westw., T. E. S. i. p. 232, 1836; Arc. Ent. i. p. 23, pl. vii. f. i., 1841; P. Z. S., 1880, p. 374. Kirby, List Hym. i. p. 24, 1882; Froggatt (larv), P. Linn. Soc., N.S.W. (2), v. p. 287; Shipp, Ent. xxvi. p. 264.

Hab. South Australia; Tasmania; Adelaide.

*smithii*, Westw., P. Z. S., 1880, p. 375, pl. xxxvi. f. 6; Kirby, List Hym. i. p. 24; Shipp, Ent. xxvi. p. 264.

Hab. Australia.



## PERGADOPSIS, mihi.

*dahlbomii* (type), Westw., P. Z. S., 1880, p. 371, pl. xxxv. figs. 3, 4; Kirby, List Hym. i. p. 28; Shipp, Ent. xxvi. p. 266.

Hab. Australia.

*guerinii*, Westw., P. Z. S., 1880, p. 367, pl. xxxv. f. 1; Shipp, Ent. xxvi. p. 265.

Hab. Australia.

## CAMPTOPERGA, mihi.

*cressoni* (type), Westw., P. Z. S., 1880, p. 368, pl. xxxvii. f. 1; Shipp, Ent. xxvi. p. 265.

Hab. Swan River, West Australia.

## PLAGIOPERGA, mihi.

*mayrii* (type), Westw., P. Z. S., 1880, p. 378, pl. xxxvii. f. 7; Shipp, Ent. xxvi. p. 266.

Hab. Swan River, West Australia.

*jurinei*, Westw., P. Z. S., 1880, p. 378, pl. xxxvii. f. 6; Kirby, List Hym. i. p. 29; Shipp, Ent. xxvi. p. 266.

Hab. Swan River, Melbourne.

## XYLOPERGA, mihi.

*hallidayi* (type), Westw., P. Z. S., 1880, p. 377, pl. xxxvii. f. 5; Kirby, List Hym. i. p. 30; Shipp, Ent. xxvi. p. 266.

Hab. Australia, Adelaide.

*P. schiodti*, Westw., is referred to *latreillei*, Westw. (Froggatt, l. c., p. 287), and the larva described.

He also describes a new species, *P. chalybea*, Frogg. (p. 285), from South Australia, together with the larvæ. In the same paper are notes upon the habits and descriptions of larvæ of *færsteri*, Westw. (p. 288), *lewisii*, Westw. (p. 287), and *polita*, Westw. (p. 285).

In the Ann. Mag. Nat. Hist. (6), vol. xii., 1893, p. 38, Kirby describes the following species from Melbourne:—

*P. divaricata* (p. 39), probably, owing to its short antennæ and three submarginal cells, referable to *Pergadopsis*, mihi; *sericea* (p. 40), probably a *Pseudoperga*, Guér.; *sellata* (p. 40), a true *Perga*, and (*Xyloperga*) *lalage* (p. 41).

ON *PARNASSIUS PHÆBUS* (FAB.) = *DELIUS* (ESP.), AND  
*P. SMINTHEUS* (DOUBLEDAY).

BY JOHN WATSON.

*Parnassius smintheus* (Doub.) is found only in the Rocky Mountains of Utah, Colorado, and Nevada, whilst *P. phæbus*, of which *smintheus* is considered a form, is found in Europe and

Central and Eastern Asia. It has seemed to me a doubtful case as to the two insects being one species. I have had a good number of *P. smintheus* collected for me in the Rockies of Colorado, Nevada, and Utah, and on comparison with *P. delius* (Esp.) = *phæbus* (Fab.) they show constant differences as follows:—

1. *Phæbus* has a more rounded contour of primaries in both sexes, the costa of primaries of *smintheus* being straight for two-thirds its length, unlike *phæbus*, which is slightly arched from base to tip; apex of primaries of *smintheus* much more pointed, to a greater degree in male than in female examples.

2. Palpi and head of *smintheus* clothed with pale golden hairs; *phæbus* with fewer, longer, and coarser dark grey ones.

3. Wings of *phæbus* more diaphanous; more pronounced at the outer margins.

4. Fringes at the terminations of the nervures, and all black markings, on *smintheus* more emphasized, and particularly a row of semilunar dark spots forming a decided band outside the cell on primaries, and in a less degree on secondaries, of both sexes of *smintheus*; those on secondaries very much pronounced in the female, less in the male, and in female and male *phæbus* almost absent. Ground colour of all wings of *smintheus* paler. The black patch of anal margin of secondaries running round the anal and lower edge of discoidal cell, most noticeable in females. I have two females where it spreads over a very considerable portion of cell, almost meeting a part of this band, which runs out along the upper and costal edge of the cell.

5. Antennæ of *phæbus* gradually swelling from half its length to the club. Shaft slightly stouter. Antennæ of *smintheus* abruptly clubbed, the club thicker at its greatest diameter than *phæbus*; club occupying only one-third or less of the antenna. Shaft more slender than *phæbus*.

6. Body and anal margins of secondaries of *phæbus* more strongly clothed with hair than *smintheus*.

When I have a greater number of pouched females of *phæbus*, I shall carefully examine them; I have but two by me, and these show a slight difference between themselves; but one slight character they have in common, which I fail to notice in seven pouched females of *smintheus*. The anterior end of the keel seems to end in a ram (if one may still keep to nautical terms); I do not, however, place much faith in this, as both specimens may have been taken *in coitu* before the complete development of their pouches, and the anterior projection may be the point of the keel at which the additions of the pouch-forming fluid were communicated to the growing keel. However, I think enough has been written to show the distinctions of the two forms, especially when one considers the isolated habitat of *smintheus* along with the other characters. That they are closely allied I do not doubt; that they are both one species I cannot admit.



# ADDITIONS TO THE LIST OF BRITISH LEPIDOPTERA DURING THE PAST TEN YEARS.

## LYCÆNIDÆ.

*Lycæna argiades*, Pall.; Entom. xviii. 249; Proc. Dors. N. H. & A. F. C. vii. pl. v.

## HESPERIIDÆ.

*Syrichthus alveus*, Hb.; E. M. M. xxviii. 244.

*Hesperia lineola*, Ochs.; Entom. xxiii. 3.

## SESIIDÆ.

*Sesia conopiformis*, Esp.; Entom. xxvii. 245.

## NOTODONTIDÆ.

*Notodonta torva*, Hb.; E. M. M. xxiii. 276.

## CARADRINIDÆ.

*Caradrina superstes*, Tr.; Brit. Noct. vars. i. 148.  
*taraxaci* var. ?.

## ORTHOSIIDÆ.

*Xanthia ocellaris*, Bork.; E. M. M. xxx. 111, 161.

## CATOCALIDÆ.

*Catocala electa*, Bork.; Entom. viii. 282; E. M. M. xxix. 64.

## PLUSIIDÆ.

*Plusia moneta*, Fab.; Entom. xxiii. 287, pl. iii. fig. 6.

## HYPENIDÆ.

*Hypena obsitalis*, Hb.; Entom. xvii. p. 265; Proc. Dors. N. H. & A. F. C. vi. pl. iii.

## ACIDALIIDÆ.

*Acidalia humiliata*, Hufn.

*osseata*, Hb. (non Haw.); E. M. M. xxix. 65.

*Acidalia immorata*, L.; Entom. xx. 290 (fig.); E. M. M. xxiv. 133.

## PYRALIDÆ.

? *Hercyna phrygialis*, Hb.; E. M. M. xxviii. 264.

## BOTYDÆ.

*Botys repandalis*, Schiff.; E. M. M. xxiii. 145; Entom. xxiii. 275,  
pl. iv. fig. 6.

## CRAMBIDÆ.

*Crambus salinellus*, Tutt, Entom. xx. 56; xxiii. 298.

## PHYCIDÆ.

*Epischnia banksiella*, Richardson; E. M. M. xxv. 63; Entom.  
xxiii. 335, pl. iv. fig. 7; Proc. Dors. N. H. & A. F. C. x.  
pl. fig. 1.

*Ephestia kühniella*, Zell.

*kühniella*, Entom. xxiii. 329, pl. iv. fig. 2.

*Euzophera oblitella*, Zell.; E. M. M. xxiii. 233; Entom. xxiii. 330,  
pl. iii. fig. 2.

*Cateremna terebrella*, Zk.; E. M. M. xxiii. 82; Entom. xxiii. 333,  
pl. iii. fig. 12.

*Dioryctria splendidella*, H.-S.

*Nephopteryx splendidella*, E. M. M. xxiv. 269; Entom. xxiii.  
332.

## GALLERIDÆ.

? *Melissoblaptēs gularis*, Zell.; Entom. xxv. 286.

## TORTRICIDÆ.

*Tortrix decretana*, Tr.

*Lozotania decretana*, Tr.; E. M. M. xxiv. 125.

## GRAPHOLITHIDÆ.

*Grapholitha gemmiferana*, Tr.; E. M. M. xxix. 80.

*Coccyx subsequana*, Haw. (*Steganoptycha*); E. M. M. xxiv. 6, xxix. 177; Proc. Dors. N. H. & A. F. C. xi. pl. fig. 5.

*pygmæana*, Ent. Syn. List (non Hb.).

*Coccyx pygmæana*, Hb.

*Steganoptycha pygmæana*, Hb.; E. M. M. xxiv. 6.

*Retinia retiferana*, Hein.; E. M. M. xxix. 113.

*margarotana*, H.-S.; Entom. xxiii. 119; E. M. M. xxvi. 49.

*Retinia posticana*, Zett.; E. M. M. xxv. 146.

*Stigmonota pallifrontana*, Zell.; E. M. M. xxiii. 232.

*Dichrorampha alpestrana*, H.-S.; E. M. M. xxix. 175.

## CONCHYLIDÆ.

*Eupæcilia erigerana*, Walsingham.

*Conchylis erigerana*, Walsingham; E. M. M. xxvii. 3.

## TINEIDÆ.

*Tinea subtilella*, Fuchs; E. M. M. xxvii. 14; Proc. Dors. N. H. & A. F. C. xii. pl. fig. 1.

*Blabophanes lombardica*, Hering.

*heringi*, Rehn.; E. M. M. xxix. 14.

*ferruginella*, Hb., var. ?.

*Micropteryx kaltenbachii*, Sta.; E. M. M. xxvi. 31.

*Micropteryx caledoniella*, Griffith; E. M. M. xxvii. 300.

*Micropteryx sangiella*, Wood, E. M. M. xxvii. 100.

## GELECHIDÆ.

*Depressaria aurantiella*, Tutt; Ent. Rec. iv. 241.

*badiella* var. ?.

*Bryotropha portlandicella*.

*Gelechia portlandicella*, Richardson; E. M. M. xxvi. 29; Proc. Dors. N. H. & A. F. C. xi. pl. fig. 6.

*Bryotropha obscurella*, Hein.; E. M. M. xxvi. 112; Entom. xxiii. 119.

*Bryotropha tetragonella*.

*Gelechia tetragonella*, Sta.; E. M. M. xxii. 99.

*Bryotropha figulella*, Staud.; E. M. M. xxix. 158.

*Lita blandulella*, Tutt; E. M. M. xxiv. 105.

*Lita semidecandrella*.

*Gelechia semidecandrella*, Threlfall; E. M. M. xxiii. 233.

*Lita salicorniæ*, Hering; E. M. M. xxx. 80, 188.

*Lita ocellatella*, Sta.; Ent. Ann. 1859; E. M. M. xxix. 243.

*Lita suadella*, Richardson; E. M. M. xxix. 241, xxx. 81.

*Xystophora* (*Doryphora*) *elongella*, Hein.; E. M. M. xxvi. 112.

*Xystophora* (*Doryphora*) *quæstionella*, H.-S.; E. M. M. xxiv. 104.

*Anacamptis anthyllidella*, Hb.; Ent. Syn. List, p. 33.

var. *sparsiciliella*, Barr.; E. M. M. xxvii. 7, xxviii. 80.

*Symmoca signatella*, H.-S.; E. M. M. xxvii. 8.

*Cataplectica farreni*, Walsm.; E. M. M. xxx. 200.



*Cataplectica auromaculata*, Walsm.; E. M. M. xxx. 201.

*Heydenia auromaculata*, Frey.; E. M. M. xxiii. 13.

*Butalis laminella*, H.-S.; E. M. M. xxv. 15, 16.

*Butalis siccella*, Zell.; E. M. M. xxiii. 275; Proc. Dors. N. H. & A. F. C. x. pl. fig. 6.

#### GLYPHIPTERYGIDÆ.

*Acrolepia assectella*, Zell.; E. M. M. xxv. 291.

*Heliozela betulæ*.

*Tinagma betulæ*, Sta.; E. M. M. xxvi. 264; Proc. Dors. N. H. & A. F. C. xii. pl. fig. 1.

#### ARGYRESTHIIDÆ.

*Argyresthia illuminatella*, Zell.; E. M. M. xxx. 51.

#### GRACILARIIDÆ.

*Ornix fagivora*, Sta.; E. M. M. xxii. 64.

\**Ornix fragariæ*, Sta.; Ent. Ann. 1874, p. 161.

#### COLEOPHORIDÆ.

*Coleophora adjunctella*, Hodgn.; Ent. Syn. List, p. 37.

*paludicola*, Sta.; Ent. Mo. Mag. xxii. p. 9.

*Coleophora agrammella*, Wood; E. M. M. xxviii. 283.

*Coleophora alticolella*, Zell.; E. M. M. xxviii. 118.

*Coleophora flavaginella*, Zell.; ("Lienig"), E. M. M. xxiv. 13, 14.

*Coleophora glaucicolella*, Wood; E. M. M. xxviii. 118.

*Coleophora leucapennella*, Hb.; E. M. M. xxvii. 302.

*Coleophora limoniella*, Sta.; E. M. M. xxi. 60.

*Coleophora mænicella*, Sta.; E. M. M. xxiv. 42.

*mühligiella*, Sta. (nec Wk., Hein.); E. M. M. xxiv. 14.

*flavaginella*, Mühlig MS.

\**Coleophora obtusella*, Sta.; Ent. Ann. 1874, p. 162.

*Coleophora potentillæ*, Sta.; (Boyd MS.), E. M. M. xxiv. 231.

*Coleophora sylvaticella*, Wood; E. M. M. xxviii. 118.

*Coleophora bilineatella*, Zell.

*tinctoriella*, Cov.; Entom. xviii. 225.

#### ELACHISTIDÆ.

*Cosmopteryx schmidiella*, Frey.; E. M. M. xxiii. 111.

\**Chauliodus daucellus*, Peyerimhoff; Ent. Ann. 1873, p. 43; E. M. M. xxiv. 143.

*Elachista scirpi*, Sta.; E. M. M. xxiii. 254.

#### LITHOCOLLETIDÆ.

*Lithocolletis anderidæ*, Fletcher; E. M. M. xxii. 40.

*Lithocolletis betulæ*, Zell.; E. M. M. xxvi. 156.

*Lithocolletis cerasicolella*, H.-S.; E. M. M. xxix. 82.

*Lithocolletis distentella*, Frey.; E. M. M. xxii. 261.

*Lithocolletis sorbi*, Frey; E. M. M. xxii. 262.

#### NEPTICULIDÆ.

*Nepticula assimilella*, Zell.; E. M. M. xxii. 113.

*Nepticula auromarginella*, Richardson; E. M. M. xxvi. 30.

*Nepticula desperatella*, Frey.; E. M. M. xxiii. 188.

\* The species marked with an asterisk are not really additions, but are included here as they were accidentally omitted from the "Entomologist Synonymic List," published in 1884.

? *Nepticula filipendulæ*, Wk.; Trans. Chich. & W. Sussex N. H. Soc.  
No. 5 (1886).

*Nepticula fulgens*, Sta.; E. M. M. xxv. 12.

*Nepticula gei*, Wk.

*gei*, Staud.; Lep. Dorset, ed. 2, p. 73 (1891).

*aurella* var. ?

*Nepticula hodgkinsoni*, Sta.; E. M. M. xxi. 103; Entom. xvii. 281.

*Nepticula nylandriella*, Tengst.; E. M. M. xxii. 65.

*Nepticula pyri*, Glitz.; E. M. M. xxvi. 88.

*Nepticula rubivora*, Wk.; E. M. M. xx. 188.

*Nepticula serella*, Sta.; E. M. M. xxiv. 260.

*Nepticula torminalis*, Wood; E. M. M. xxvi. 209.

*Nepticula woolhopiella*, Sta.; E. M. M. xxiv. 62.

## MALE CYCLOPIDES MINENI.

By PHILIP DE LA GARDE, F.E.S.

A MALE example of this species was caught by me at Mombasa in July of this year, and has been kindly identified by Mr. Trimen, Curator of the South African Museum, who gives the following description:—A male of *Cyclopides mineni*, Trim., taken at Mombasa in July, 1894, by Mr. P. de la Garde, R.N., expands 11 lin., while the type specimen (apparently a female) taken in Manica by Mr. F. C. Selous expands 1 in.  $2\frac{1}{2}$  lin. The Mombasa specimen further differs from the type in having on both upper and under sides of the fore wing a ninth (costal) spot in the discal series, while the lower of the two disco-cellular spots, though present on the under side, is wanting on the upper side; and on the under side of the hind wing both the sub-basal spot and the disco-cellular spot are conspicuously centred with white.

I much regret I am unable to state what shrub this insect was caught amongst, owing to absolute ignorance at the time of its being a new species, and I therefore took no special note of surroundings.

Mr. Trimen tells me that the original description and figure of Mr. Selous' example appeared in Proc. Zool. Soc. 1894, p. 72, Pl. vi. f. 16.

H.M.S. 'Raleigh,' Simons' Bay, Sept. 27th, 1894.

## NOTES AND OBSERVATIONS.

MR. JOHN W. DOWNING'S COLLECTION.—This collection of British Macro-Lepidoptera was dispersed at Stevens's on October 23rd. On the whole the condition of the specimens was, perhaps, not quite so good as usual. Mr. Downing, however, was well known as a pretty constant frequenter of Stevens's sale-rooms, and his collection contained numerous excerpts from many of the principal sales held there for several years past. Two lots of five and six specimens each of *Aporia crataegi* (which is rapidly advancing in price), with others, fetched 26/- and 30/-. Pairs of *Pieris daphidice*, with *Leucophasia sinapis*, &c., went for 30/-, and 21/-. Fifteen *Chrysophanus dispar* ranged from 90/- for a fine female to 45/- for an indifferent male. They were, however, all more or less damaged or repaired, and decidedly, as far as condition was concerned, were below the average specimens of this scarce species recently disposed of, which no doubt accounts for the moderate price obtained. A very fine black male *Lycæna adonis* went to a well-known collector of this group for 70/-; whilst three and four specimens of *L. acis*, with other decent things, were not dear at 21/- a lot. *Dicranura bicuspis*, mostly from Dr. Gill's collection, went chiefly to Devonshire, at an average of about 9/- a specimen. Mr. Bidwell's Ipswich *Notodonta trilophus* fetched 26/-. There were some fine examples of the old fen form of *Ocnèria dispar* from Dr. Gill's collection, which realised 10/-, 8/-, and 8/- a lot. Twenty *Lælia cænosa*, sold in pairs, fetched from 32/6 to 20/- for two females, with pupa-case. Two lots of half-a-dozen each of *Lithosia molybdeola* and *L. caniola* brought 30/- and 28/-; *caniola* alone fetching 26/- and 18/-. Six *Nola centonalis* and eleven *N. albulalis* fetched 26/-. A fine specimen of *Deiopeia pulchella*—indeed one of the finest I have seen, taken by W. J. Austen at Folkestone—was cheap at 26/-. Two others, not authenticated, with other things, only realised 12/-. A pair of *Lasiocampa ilicifolia*, with no history other than "Cannock Chase," went for 30/-. A specimen of *Leucania vitellina*, taken by Mr. Downing himself, made 18/-. Two others, one by Meek, 16/-; remaining two, no data, with nineteen other *Leucanidæ*, went for 7/-. A fine lot of eight *Senta ulvæ*, including one very nice var. *wismariensis*, for which there was sharp competition, was captured for 42/-. Four lots of five *Nonagria brevilinea*, with *cannæ*, *neurica*, and other good things, fetched from 7/- to 14/- a lot; one of the lots, at 11/-, included two of the var. *sinelinea* (Farn). Specimens of *Laphygma exigua*, one from Sheppard's collection, fetched 8/- and 12/-; whilst two *Pachetra leucophæa*, from Wye Down, with others, only cost their purchaser 8/-. Of *Noctua subrosea* there were four pairs and a triplet, which made from 63/- a pair to 26/- for the three. Some fine vars. of *Tæniocampa gothica*, including var. *gothicina*, with seven *Pachnobia alpina*, went for 13/-. A fine black *Dianthæcia conspersa* var. *obliteræ* of Robson (doubtless from Unst), with ten *D. casia* and four good *D. barrettii*, went for 26/-; other similar lots of *D. barrettii* realising from 26/- to 20/-. The gem of the collection was a remarkable mottled variety of *Venilia maculata*, in which the ground colour and the colouring of the spots apparently changed places; this made 80/-. With this exception, I noticed nothing very special amongst the Geometræ.—THOS. W. HALL,



**VANESSA C-ALBUM IN KENT.**—I have five specimens of this insect, which were said to have been taken by the late Alexander Russell, of this town, about thirty-six years ago, in East Kent. Russell himself did not tell me where he had taken them; he was reticent about the matter. A single specimen was taken at Godinton, near Ashford, by Mr. W. Young about fifteen years ago. There may be a locality for the species in Kent, and the seemingly sporadic appearance of the insect may be caused by stragglers from its metropolis. The last years of the fifties were years of plenty for butterfly-hunters; many of the Diurni that I have not seen of late years were then common objects of the country in this district, and young collectors, thinking it would be always so, neglected to fill up their series, to their lasting regret.—C. VIGGERS; 36, Hardinge Road, Ashford, Kent, Nov. 15th.

**LIPARIS SALICIS IN THE LONDON DISTRICT.**—Mr. Barrett, in his 'Lepidoptera of the British Islands,' writes concerning *Liparis salicis*:—"Now it appears never to be seen around London." . . . It may therefore be interesting to note that I found one of these moths at Shepherd's Bush in 1887, and in 1892 I found a larva on a poplar-tree growing in our garden.—J. F. BIRD; Rosedale, 162, Dalling Road, Hammersmith, W., Nov. 5th, 1894.

**LARVÆ ON MONKSHOOD.**—With respect to recent notes (*ante*, pp. 268, 294, 318), it may be of slight interest to mention that during 1892 and 1893 I bred some twenty specimens of *Polia flavicincta*, from larvæ found feeding on *Aconitum* in my garden.—A. VINCENT MITCHELL; Crozier Road, Mutley, Plymouth, Oct. 25th, 1894.

**A SUGGESTION IN ANTICIPATION OF NEXT YEAR'S SUGARING.**—As the berries of the yew (and perhaps of the ivy) are so very attractive to autumnal species of Lepidoptera, why should they not, if gathered now and bottled in rum for next season, be mixed with sugaring compound and prove equally seductive in summer and early autumn?—H. G. KNAGGS; Folkestone.

**"KYANIZING" AND THE "EMERALDS."**—I do not think that it is generally known, at least it was unknown to me until quite recently, that a weak solution of perchloride of mercury is destructive to the greens of such genera as *Geometra*, *Phorodesma*, *Nemoria*, and *Iodis*; but I was horrified the other day to find that such was the case, the more so as the mischief had been done by my friend Mr. Hills in carrying out my suggestion of spraying with a five-grain ethereal solution of the perchloride. It is some consolation to know that, with the exception of the insects mentioned, no further damage was done, and the result of the operation was otherwise perfectly satisfactory. Still most of your readers will agree with me, I fancy, that the above warning is very necessary.—H. G. KNAGGS; Folkestone, Oct., 1894.

**ENNOMOS TILIARIA, SECOND BROOD?**—Although I am afraid it will not afford an explanation of the appearance of the second brood of *Ennomos tiliaria* which Mr. Bruce recorded in the November number, yet it may be of interest to note that I beat from a birch in the New Forest, on Aug. 6th this year, a larva of this species, which I thought

was nearly full-grown. The next day I returned to London, and I then sleeved it on a young birch-tree in the garden, expecting it to spin up at once; this it did on the 15th, making a flimsy cocoon of pale yellow silk between a birch-leaf and the material of the sleeve, having apparently fed fairly regularly on the preceding nights. The cocoon was quite slight, and the larva, which could be easily seen through it, did not pupate for five or six days, and eventually emerged on Sept. 20th. Whether *E. tiliaria* was particularly common in the New Forest this year, or whether there were two successive emergences like those noted by Mr. Bruce in Sussex, I do not know; but if so, the fact of the larva being found on Aug. 6th in a nearly full-grown condition would make it very improbable that the second brood had descended from the first.—F. P. BEDFORD; 326, Camden Road, N.W.

### CAPTURES AND FIELD REPORTS.

PETASIA CASSINEA IN OXFORD.—On Nov. 6th I was brought by my friend Mr. F. J. Briggs a much-worn male specimen of *Petasia cassinea*, which he found on a lamp in Oxford the evening before. The wings, though considerably rubbed, are not a bit torn, and some of the markings are still very distinct. I believe this species has not been taken before in this district.—H. W. SHEPHEARD-WALWYN; Hertford College, Oxford, November 6th, 1894.

NOTES ON PIERIS BRASSICÆ, &c.—Concerning Mr. W. J. Lucas's query (*ante*, p. 295), I may say that *P. brassicæ* has been, as far as I have observed, remarkably uncommon this year in this district. I have not seen more than eight or ten specimens during the year. The larvæ are usually abundant in my garden, but this year I have not seen one, though I have diligently searched. Of *Colias edusa* I have seen but one example, a male, which I captured last August at Crabtree. *Vanessa cardui* seems much commoner than usual.—A. V. MITCHELL; Crozier Road, Mutley, Plymouth, Oct. 25th, 1894.

SCARCITY OF PIERIS BRASSICÆ AND *P. RAPÆ*.—Referring to the remarks of Mr. Lucas and Mr. Harcourt Bath (*ante*, pages 295 and 318 respectively), I can say that in Norway, at Arendal, near Christiania, I only saw two *P. rapæ*, and not a single *P. brassicæ*; on touring about through Fevig, Bolkeslaw, and Hitterdal the numbers were much the same.—C. F. COOPER; Rugby, Nov. 3rd, 1894.

CRAMBUS FASCELINELLUS IN N. LANCASHIRE.—I have just seen an example of the *Crambus* which Mr. Arkle, in his "notes" (*ante*, p. 305), says had been identified for him as the rare *C. fascelinellus*, and find that it is not that species, but the more widely distributed, although local, *C. falsellus*. I may mention that a specimen of the last-named species was sent to me a few weeks ago by another correspondent as *C. ericellus*.—R. S.

ACHERONTIA ATROPOS IN CAMBRIDGESHIRE.—A boy out of the village brought me a very large pupa of *A. atropos* on Oct. 18th, found in a potato-field. In August last I stayed for a month at Harlech, Merionethshire, where *Hipparchia semele*, *Argynnis paphia* and *aglaia* were plentiful on the

mountains. I also saw a great many dragonflies. — (Miss) M. WILSON; The Vicarage, Guilden Morden, Royston, Cambs., Oct. 31st, 1894.

CHÆROCAMPA CELERIO IN SOUTH HANTS.—I have a good specimen of *Chærocampa celerio*, which was taken here (Porchester) on Sept. 30th. I thought it worth recording, as I believe this insect is rare. — (Miss) M. J. STARES; Porchester, Hants.

CHÆROCAMPA CELERIO IN KENT.—*C. celerio* was taken on the South Foreland Lighthouse on August 12th of this year, by the lighthouse-keeper.—H. S. FREMLIN.

COLIAS EDUSA IN SURREY.—I captured a fine male *C. edusa* in a lane near Ashtead, on August 29th.—W. J. KAYE; Worcester Park, Surrey, Nov. 13th, 1894.

PLUSIA NI BRED FROM PORTLAND.—In July last Mrs. Richardson was so fortunate as to find, at Portland, two larvæ which so much resembled *Plusia gamma* that I suggested that they were only that abundant species, and might as well be turned out into the garden; however, she was wiser, and kept them till they turned to pupæ enclosed in cocoons which were smaller and much neater than those of *P. gamma*. On Sept. 6th a beautiful specimen of *P. ni* emerged, and a second one on Sept. 10th. This is not the first occurrence of this species at Portland, as Colonel Partridge took a specimen there at light in Sept., 1888 (E. M. M. xxv. 160). It looks as if it had established itself in the locality, and I hope that it may turn up again next year. I do not think that any one could easily mistake the imago for *gamma*; it is more like *interrogationis*. — NELSON M. RICHARDSON; Montevideo, near Weymouth, Nov. 9th, 1894.

DRAGONFLIES AT THE BLACK POND, ESHER.—During the latter part of the season of 1894 this neighbourhood yielded some fairly good insects belonging to the exceedingly handsome, though much maligned but no less harmless, group of the *Odonata*. Early in August we discovered the presence there of *Anax formosus* (the imperial dragonfly), and on the 10th three were secured, in addition to those already recorded (*ante*, 271). Extremely difficult is it to get within striking distance of these splendid insects, not only because they seem particularly suspicious of any person in possession of a net, but also from the habit they have of keeping well out over the pond, and hawking round the edges of the reed-beds: moreover, their flight is often intermittent, for the disappearance of the sun behind a cloud is the signal for the cessation of their restless movements to and fro, which are resumed however on his reappearance. The number of insects they destroy must be enormous, but, as with other large dragonflies, they do not take them haphazard, for I have often noticed them approach a large insect (possibly a bee), and when within a foot or so of it retire, as if disappointed. Other dragonflies on the wing on the 10th were *Æschna grandis*, *Libellula quadrimaculata*, *L. scotica* [*Sympetrum scoticum*], *Agrion puella*, and *A. [Pyrrhosoma] tenellum*. While absent from the neighbourhood for a time, at the end of August, the companion of most of my dragonfly expeditions sent me two male specimens of *Æschna juncea*, one male *Æ. cyanea*, and one male *Æ. grandis*, all of which he took at the Pond on Aug. 31st, an ideal dragonfly day. On Sept. 10th we again paid a visit to Esher, and found that *A. formosus* was over, its place being taken by *Æ. juncea* and *Æ. grandis*. Two of the latter were secured, and



three of the former—two males and one female—the last taken as it was ovipositing by repeatedly dipping its abdomen, apparently at random, into the water. Still another member of the genus *Æschna* fell to my net, a single male of *Æ. mixta*. This dragonfly, when captured, was eating a ladybird—an insect which is usually considered an unpalatable morsel. *Agrion puella* was still on the wing, and one *A. pulchellum* was secured. With *Libellula scotica* was now flying a congener, *L. striolata* [*Sympetrum vulgatum*], a single specimen of which I had, I believe, sighted as early as Aug. 10th. Sept. 12th afforded no fresh species, but we noticed that, at this part of the season at least, the larger dragonflies seemed to fly best during the four or five hours at the middle of the day and then, as a rule, only when the sun was shining. As exceptions to rule, however, I ought to mention that I saw an *Æ. grandis* flying in Oxford at 7 p.m. on August 29th, and another *Æschna* (probably *cyanea*), circling about, at Morden, in Surrey, on the very dull afternoon of Sept. 16th. Our last expedition of the season took place on Sept. 19th, on a still and warm, but autumnal afternoon. On this occasion *L. scotica* and *L. striolata* were well in evidence, and a few *A. puella* were still about; but our attention was chiefly taken up with *Æ. juncea* and *Æ. grandis*, which were even yet on the wing in fair numbers. Both species had a propensity for settling in the sun, on the trunks of the pines which fringe the margin of the Pond, and while so resting were very difficult to see. Attempts to reach them from the front were not successful, but if the tree was approached from behind a stroke might be made without frightening the insects, even with the net held in the hand, the stick being dispensed with for the occasion. From this and other observations, it is clear that the sight of a dragonfly is very keen, while the incident just mentioned would seem to point to the fact that the sense of hearing is not well developed in these insects. On this day an *Æschna* (no doubt *juncea*) was noticed with a very large object in its jaws. Presently something was allowed to fall, which proved to be the larger part of a silver-y moth (*Plusia gamma*), from which the dragonfly had bitten the head and front part of the thorax, allowing the rest to fall to the ground. Our captures at this single pond during 1894 and the preceding season have comprised fifteen species, viz.:—*Platetrum depressum*, *Libellula quadrimaculata*, *L. striolata* [*Sympetrum vulgatum*], *L. scotica* [*S. scoticum*], *Cordulia anea*, *Anax formosus*, *Æschna mixta*, *Æ. juncea*, *Æ. cyanea*, *Æ. grandis*, *Agrion* [*Enallagma*] *cyathigerum*, *A. pulchellum*, *A. puella*, *A. [Pyrrhosoma] minium*, *A. [P.] tenellum*; while *Calopteryx splendens* and *Brachytron pratense* I secured in the same neighbourhood, though not at the Black Pond.—W. J. LUCAS; Gordon Road, Kingston-on-Thames, Nov. 12th, 1894.

TORTRICES AT NORTHWOOD, MIDDLESEX. — In my note under this heading (*ante*, p. 323) the names of two species were unfortunately transposed. I refer to *Phoxopteryx lactana* and *Grapholitha ramella*. The two forms mentioned are those of the last-named species, one of which resembles *P. lactana* (= *ramella* of the 'Manual'), and the other is very similar to *Pædisca bilunana*. "*G.*" *germarana* should be *Stigmonota gemarana*. I may add that *S. internana* was generally common wherever furze (*Ulex europæus*) was plentiful, and two examples of *Penthina capræana* were bred from larvæ in willow-shoots.—R. S.

COLLECTING AT TUNBRIDGE WELLS.—The season of 1894 has been, in my opinion, a very bad one. Early in March I worked the willows on

the railway banks here, and took a few *Tæniocampa stabilis*, *T. instabilis*, *T. gothica*, *T. cruda*, *Pachnobia rubricosa*, and *Xylocampa lithoriza*. By April 3rd the sallow bloom was over. At lamps in the spring and autumn *Phigalia pilosaria*, *Asphalia flavicornis*, *Hybernia rupicaprararia*, *H. progemmaria*, *Anisopteryx æscularia*, *Eugonia erosaria*, *Lophopteryx camelina*, *Cynatophora fluctuosa*, *Crocallis elinguararia*, *Cidaria miata*, *Orthosia lota*, *Selenia illustraria*, *Xanthia flavago* (*silago*), *X. fulvago* (*cerago*), *Gortyna ochracea* (*flavago*); *Ennomos tiliaria* was particularly plentiful on lamps this season. I can strongly recommend Messrs. Watkins and Doncaster's improved lamp-net, as it saves all climbing, and an insect is rarely missed. On Ashdown Forest and at Tunbridge Wells sugar was of little use, but *Phlogophora meticulosa* and *Amphipyra pyramidea* were particularly plentiful. I took one more *Plusia moneta*, making my seventh capture of this beautiful insect. Rhopalocera were scarce this summer, but I took some beautiful specimens of *Argynnis aglaia* and *A. adippe*, in the Broadstone Warren, Ashdown Forest. *Pieris brassicæ* was very scarce, as also was *Vanessa io*.—R. A. DALLAS BEECHING; Tunbridge Wells, Nov., 1894.

COLLECTING IN SOUTH WALES.—The following notes of the season which is fast closing may be worthy of note from this part of South Wales. Speaking generally, it has been, with a few exceptions, unfavourable and disappointing with Lepidoptera. The season early appeared to promise well; *Hybernia rupicaprararia*, *H. marginaria* (*progemmaria*), and *Anticlea badiata* (the last-named particularly) were common; and species of *Tæniocampa* were fairly so. I noticed *Lycæna argiolus* on April 3rd, *Argynnis euphrosyne* on the 17th, and also *Euchloë cardamines*; all three species were fairly abundant. But in the month of May the weather changed, the temperature being very cool, and on three nights sharp frosts occurred, which appeared to have caused the disappearance of *E. cardamines* before the end of the month. Of this butterfly I captured a very diminutive specimen, measuring only 1 inch 3¼ lines, taking twelve lines to an inch. All the *Pieris* were scarce throughout the spring, and were not plentiful in the second brood also; of *P. brassicæ* I did not observe more than a dozen specimens. The following were the only Lepidoptera in any way abundant:—*Lycæna icarus*, *Argynnis euphrosyne*, *A. aglaia*, *Vanessa urticæ*, *Pararge megæra*, *Grammesia trilinea*, *Agrotis exclamationis*, *A. tritici*, *Caradrina cubicularis*, *Plusia gamma* (this moth particularly so in September and early October), *Phlogophora meticulosa*, *Rumia cratægata*, *Cidaria fulvata*, *C. suffumata*, *C. ribesiararia*, *Acidalia aversata*, *A. bisetata* (this last particularly so). Of usually common species which were scarce, *Spilosoma menthastris*, *S. lubricipeda*, *Triphæna pronuba*, *T. comes* (*orbona*), *T. ianthina*, *Apamea didyma* (*oculea*), and *Noctua xanthographa* were the most noticeable. "Sugar" proved, on the whole, a complete failure, the only species appearing rather commonly being *Grammesia trilinea*, *Agrotis exclamationis*, and *P. meticulosa*. A few days in July was the only time some of the Noctuxæ appeared even in existence, and the blossoms of flowers and other bloom proved the only attraction; all bloom, commencing with the "May," has been most luxuriant this season here, and when this is the case I have not much faith in artificial sweets. *Vanessa cardui* I noticed rather more frequently than for some seasons, but it was not a "*cardui*" year. Of *Colias edusa* no examples were seen. The apple-trees when in blossom were much infested with small larvæ, and that now much-abused bird, the house-sparrow, was very busy destroying them.



Up to the present time, autumn moths excepting, *Xanthia ferruginea* and *P. meticulosa* are very scarce, but the very rainy weather we have had since Oct. 22nd may have kept them from showing themselves. Geometræ larvæ, however, I have frequently noticed. Queen wasps were abundant in the spring, but very few of their progeny have since appeared.—T. B. JEFFERYS; Langharne, Carmarthenshire, November, 1894.

COLLECTING AT DOUGLAS, LANARK.—During July and part of August insects were rather unusually abundant here, and sugaring successful. This year, too, has been remarkable, as bringing to light insects which I have not seen in this locality before; whilst, on the contrary, some which I have taken each year previously were absent this. I began sugaring on July 20th. This was the most successful night I had as regards numbers, and was memorable for an exceedingly fine display of aurora soon after midnight. *Xylophasia polyodon* turned up in large numbers, amongst them being many beautiful, rich, dark varieties. *Noctua festiva* was also in abundance and very variable, and *Mamestra anceps* was fairly common. Besides these a few or single specimens of the following were taken:—*Xylophasia rurea*, *Noctua plecta*, *Leucania impura*, *Chortodes arcuosa* (not taken by me here before), *Larentia cæsiata* (not observed at sugar previously by me), *Miana fasciuncula*, *Noctua augur*. Single specimens of *Ellopiæ fasciaria* and *Coremia propugnata* were taken on the wing at dusk, and specimens of *Melanippe rivata* and *Metrocampe margaritaria* (unusually common this year) at rest on tree-trunks. *Larentia pectinataria* was also unusually abundant on the moors, owing perhaps to the large amount of bedstraw this year. A specimen of *Tanagra atrata* (*chærophyllata*) was brought to me the same day, and on the 24th I took another; I have never observed the species here before. July 24th, very windy night. At dusk a good many *Larentia cæsiata* (usually scarce here) were netted; also *Larentia pectinataria*, *Melanippe rivata*, *Metrocampe margaritaria*, *Agrotis porphyrea*, and a single specimen of *Hepialus velleda* (not observed here before) flying over the heather. Several *Cænonympha pamphilus* were observed at rest on rushes on the moor after dark. Sugar produced all the species previously taken, as well as *Agrotis porphyrea*, *Triphana pronuba* (dark varieties), and *Noctua xanthographa* (dark varieties). July 27th seemed an ideal night; but not many insects turned up, some sugared trees being blank. At dusk *Cidaria pyraliata*, *Hypsipetes elutata*, and *Mamestra brassicæ*, besides those taken before, were netted. At sugar occurred the species previously noted, and *Coremia propugnata* (1), *Leucania impura*, *Mania typica*, *Apamea oculea*, *Caradrina alsines*, and *Ellopiæ fasciaria*; whilst *Heliopsis marginata* and *Charæas graminis* flew into the candle-light. Flying over the heather at dusk, I took a pretty *Eupithecia*, which I have not yet identified; I had taken one other of the same species under like circumstances on the 24th. July 29th. A specimen of *Lycæna alexis* seen. July 31st. *Noctua baia*. Aug. 3rd. Most of the old things still about; at sugar a single specimen of *Celæna haworthii* put in an appearance for the first time this year. Aug. 6th. *Eubolia mensuraria* beginning to occur. Aug. 10th. A cold night; few insects about. *Cidaria populata* beginning to emerge. At sugar, *Cidaria pyraliata* (1), *Celæna haworthii* (1); the latter, generally fairly abundant, has been almost absent this year, though I have searched for it on the rushes after dark, where it is usually to be found. A single specimen of *Noctua neglecta* visited the sugar to-night; I have never seen it here before. Why should it be fairly common this year? Aug. 17th.



Not a favourable night; rather cold and windy, with nearly full moon. In spite of this I took nine *Noctua neglecta* at sugar, and noticed that almost all seemed to prefer the drops of sugar on the ground at the foot of the trees. I took another pair of *neglecta* in cop. on the heather. *Noctua glareosa* (7) also put in an appearance at sugar for the first time this year, and I also took one at the flowers of a rush. Aug. 20th. Sugared extensively over the heather to get *neglecta*, but night unfavourable, bright moon, and slight frost, and only got two specimens. Nothing else occurred at the sugar, except one *Noctua xanthographa* and two or three worn *Xylophasia polyodon*. Aug. 23rd. Again tried especially for *neglecta*, but only took one. Hardly anything at sugar. It got cold after dark, and there were four degrees of frost during the night. Aug. 25th. Saw a specimen of *Polyommatus phlæas* and several *Pieris rapæ*; butterflies of any kind are a rarity here. Aug. 28th. *Polia chi*, always common here, is beginning to emerge. Aug. 29th. Took one *Crocallis elingvaria*. Aug. 31st seemed an ideal night for sugar, but only two moths (*Noctua glareosa* and *Xylophasia polyodon*) put in an appearance. The lime-trees had just come out, which may have kept insects away from the artificial sweets. *Tapinostola fulva*, out now in plenty, flying over the damp places on the moors at dusk; *Cidaria miata*, one specimen on Sept. 20th. *Oporabia dilutata* beginning to emerge on 21st. *Carsia imbutata*, which has been observed each year lately at Douglas, sometimes commonly, was this year apparently entirely absent; at least I saw not a single specimen.—(Rev.) J. A. MACKONOCHE; The Hirsell, Coldstream, N.B., Oct. 24th, 1894.

COLLECTING IN KINCARDINESHIRE.—I spent a fortnight collecting, in July of this year, at Stonehaven, a seaport, and the county town of Kincardineshire. It is a favourite summer resort, being situated in a beautiful bay. One of the principal objects of interest is Dunotter Castle, about a mile from the town, which stands on a perpendicular rock 150 ft. above the level of the sea, and almost separated from the land by a deep chasm. The coast is bordered with cliffs, intersected with beautiful little bays; and in these bays I spent most of my time collecting, the castle bay perhaps receiving most attention. Here *Lycæna agestis* var. *artaxerxes* seemed to have its headquarters, although it occurred in most of the other bays. I took a long series, and obtained a couple with large white discoidal spots on the posterior wing. *L. alexis* was also very common, and the females varied considerably. One which I have taken is almost as blue as the male, with the spot on the anterior wing surrounded with white, and three of the cellules at the tip of the wing have dashes of white. Two others are almost as dark as *artaxerxes*, with a very slight suffusion of blue on them. *Pieris brassicæ*, *rapæ*, and *napi* were all represented; the last mentioned seemed to vary somewhat, but unfortunately they were not in good condition. *Vanessa urticæ* was often observed careering along wildly. I netted several specimens of *V. cardui*, but they were mere shadows of their former beauty. A single specimen of *V. atalanta* on one occasion alighted on a flower; my net was in my bag, but I quickly fixed it up, and, just as I made the stroke, it circled aloft, bidding me farewell by disappearing over the cliff. *Hipparchia semele* was just beginning to make its appearance, and I managed to obtain two or three examples. *Epinephele ianira* was abundant everywhere; the females were very large and beautifully marked. *Cænonympha pamphilus* was common above the cliffs at Fowls Heugh. Two examples of *Polyommatus phlæas* were obtained in the castle bay, and several specimens

of *L. alsus*. *Hepialus lupulinus* was taken near Cowie. *H. velleda* was very abundant in the castle bay, and several of the var. *carnus* were netted; *H. humuli* was also very common, and much larger than those we obtain near Glasgow. *Zygæna filipendulæ* was also common, especially at Fowls Heugh, where it might be seen on the top of the cliffs flying in dozens; the ground colour is much bluer than some southern specimens I have in my collection; I obtained one specimen with the spots and the under wing verging on pink. A single type of *Nudaria mundana* was taken from a wall in the town, and, although I watched all the walls along the roads, I could not find its headquarters. A couple of *Gnophos obscurata* were netted in the castle bay on different occasions. A single *Acidalia incanaria* was taken one evening when beating the hedges. Two specimens of *A. scutulata* were taken near the Distillery, and *A. aversata* turned up at times. Single specimens of *Fidonia pinaria* and *Larentia cæsiata* were caught one evening in a fir-wood. *L. didymata* was abundant everywhere. *Metrocampa margaritata* and *L. pectinitaria* occurred in all the woods. *Emmelesia alchemilata* and *albulata* were taken at several places. *Eupithecia vulgata* and *assimilata* were taken in the garden, and two fine specimens of *subfulvata* were caught in one of the bays. A couple of *Thera variata* were netted on different occasions. *Melanthia ocellata*, *Melanippe subtristata*, *montanata*, and *fluctuata* all occurred in numbers. *Coremia munitata* was taken where the ground was marshy, and three females came to sugar one evening. *Campptogramma bilineata* was also common, and varied considerably. *Cidaria russata*, *immanata*, *fulvata*, and *pyraliata* occurred in some numbers, a fine variety with a dark central band being taken of the last. *Abraxas grossulariata* and *Halía vaularia* were taken in the gardens, and *Eubolia mensuraria* was common everywhere. Sugaring took fairly well some evenings. *Leucania conigera* put in its appearance frequently; *lithargyria*, *impura*, and *pallens* in abundance; as also *Xylophasia rurea* and a few of the var. *alopecurus*, *lithoxylea*, and *polyodon* with the black var. of the same; *Miana fasciuncula* and its red variety; *Apamea oculatea*, commonly; a single and fine specimen of *Caradrina blanda*; *cubicularis*, in dozens; and several of *Apamea gemina*. Of the *Agrotis*, *exclamationis* was common, and a single and dark specimen of *segetum* was taken. *Triphæna pronuba* came occasionally; but the majority of insects at sugar were of the genus *Noctua*—*augur*, *pecta*, *c-nigrum*, *festiva*, *rubi*, *umbrosa*, and *baia*, all coming freely, a couple of *Phlogophora meticulosa*, several *Hadena oleracea*, and two fine specimens of *Miana typica*. A single specimen of *Bryophila perla* was taken off a wall in the town; *Miana arcuosa* turned up several times; *L. conigera* and *Plusia v-aureum* were netted at the flowers of the ragged-robin; *Habrostola urticæ* at nettles; *P. chrysitis* and *gamma* were taken two or three times, and *Mamestra brassicæ* in the gardens and outhouses. *Hypena probosidalis* occurred everywhere, *purpuralis* and *cespitalis* singly; *forficalis*, *fuscalis*, and *lutealis* were also caught. *Scoparia ambigua*, *dubitalis*, *cembra*, and *murana* were common; and a single specimen of *angustea* was boxed from a paling in the town. *Crambus pratellus* and *tristellus* were common, *culmellus* a nuisance, and a nice series of *hortuellus* was taken. Of the Tortrices, *herbosana* occurred everywhere; *hohenwarthiana*, *badiana*, *stramineana*, *scutulana*, *hamana*, *lanceolana*, and *ribeana* could be taken frequently; and *ulmana* and *littorana* were taken singly. Amongst the Tineæ, *liturella*, *assimilella*, *cinerella*, *terrella*, *thrasonella*, *curtisellus*, and *albicostella*, and others were taken; *bertrami* turned up occasionally, *fuscodactylus* was common near Cowie,



and a single example of *bipunctidactylus* was taken.—A. ADIE DALGLISH; 21, Princes Street, Pollokshields, Glasgow.

COLLECTING IN WEST ROSS-SHIRE.—The following is a list of Lepidoptera which I took during a ten days' stay at Strathcarron. I send it because, so far, there do not appear to have been any records of collecting in that part of Scotland. The country is rough moorland and mountainous, and there is next to no cultivation in the Carron Valley. There were the usual birch-woods upon the hillsides, and a sprinkling of ancient pine-trees in some sheltered places up among the hills:—*Pieris brassicae*, *P. napi*, *Argynnis selene*, *A. aglaia*, *Vanessa urticae* (seen up to 2700 ft.), *Erebica athiops* (500 ft.), *Epinephele ianira* (much richer brown than in the South of England, and with a slight vinous tint), *Cænonympha typhon*, *C. pamphilus*, *Thecla rubi*,\* *Lycæna icarus*, *Trochilium crabroniformis* (one taken while buzzing about a willow bush at the sea-level), *Zygæna (trifolii?)* (an empty cocoon), *Bombyx callunæ* (larvæ), *Saturnia carpini* (larvæ), *Nemophila russula*, *Orgyia antiqua* (empty cocoon and eggs), *Thyatira batis*, *Asphalia flavicornis* (larvæ), *Acronycta rumicis*, *Leucania impura*, *L. pallens*, *Xylophasia rurea* and var. *combusta*, *X. lithoxylea*, *X. monoglypha* (mostly darkish, and some nearly black), *Apamea gemina*, *A. didyma*, *Miana arcuosa*, *Caradrina quadripunctata*, *Agrotis strigula*, *Noctua augur*, *N. plecta*, *N. c-nigrum*, *N. festiva*, *Triphana comes*, *T. pronuba*, *Mania typica*, *Tæniocampa gothica* (larvæ), *T. gracilis* (larvæ), *Aplecta tincta*, *Hadena adusta*, *Calocampa vetusta* or *C. exoleta* (larva), *Cucullia umbratica*, *Habrostola tripartita*, *Anarta myrtilli*, *Metrocampa margaritaria*, *Ellopiæ prosapiaria*, *Biston hirtaria* (larvæ), *Boarmia repandata*, *Dasydia obfuscata*, *Psodos coracina*,\* *Acidalia bisetata*, *A. fumata*, *Cabera exanthemaria*, *Larentia cæsiata*, *L. flavicinctata*, *L. viridata*, *Emmelesia alchemillata*, *E. albulata*, *E. minorata* (*blandiata*), *Eupithecia pulchellata* (larvæ), *E. minutata?*, *Hypsipetes sordidata* (the moorland form and very variable and handsome), *Melanthia ocellata*, *Melanippe hastata* (larvæ), *M. sociata*, *M. montanata*, *Camptogramma bilineata* (some nice dusky vars. and brownish vars., rather like the Shetland examples), *Cidaria miata* (larvæ), *C. truncata*, *C. populata*, *Anaitis plagiata*, *Crambus margaritellus*. Species marked with an asterisk were noticed by Mr. L. Hinxman earlier in the year. I have purposely not added any remarks about the numbers of each insect, because I think, after so short an experience, such remarks might be more misleading than instructive.—W. M. CHRISTY; Watergate, Emsworth, Hants, Nov., 1894.

ERRATA.—*Ante*, p. 301, line 7, for "right" read "left"; p. 321, line 13, for "Toxford" read "Yoxford"; p. 323, for "Canford Hill Estate" read "Canford Cliffs Estate."

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—October 17th, 1894. Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Dr. H. G. Breyer, of Prætoria, Transvaal, South Africa, was elected a Fellow of the Society. Mr. G. C. Champion read a letter, dated 15th August last, from Mr. J. Y. Johnson, of Funchal, Madeira, on the subject of a recent visitation of locusts to the Island, and exhibited specimens.



Mr. Johnson mentioned that Darwin, in his 'Origin of Species,' recorded that in November, 1844, dense swarms of locusts visited Madeira. He said that since then, until August last, these insects had not visited the Island. Mr. Champion remarked that the species sent by Mr. Johnson was *Decticus albifrons*, Fabr., not a true migratory locust. Mr. Champion also exhibited specimens of *Anthaxia nitidula*, *Velleius dilatatus* and *Athous rhombeus*, taken by himself in the New Forest during the past summer. Mr. H. Goss read a letter he had received from Capt. Montgomery, J.P., of Mid-Ilovo, Natal, reporting vast flights of locusts there, extending over three miles in length, on the 31st August last, and exhibited a specimen of the locust, a species of *Acridium*. Capt. Montgomery stated that, as a rule, his district and most of Natal was free from the pest, but that an exceptional invasion had occurred in 1850. Mr. J. W. Tutt exhibited four typical specimens of *Emydia cribrum* from the New Forest, and, for comparison, four specimens of the var. *candida* of the same species, taken at an elevation of 4000 ft. near Courmayeur, on the Italian side of Mont Blanc. He stated that he had also met with this form in the Cogne Valley, at an elevation of from 6000 to 8000 ft. Mr. R. Adkin exhibited, for Mr. H. Murray, a specimen of *Erebia aethiops*, in which the left fore wing was much bleached, taken in August last, near Carnforth. Mr. Adkin also exhibited a series of *Acronycta rumicis* from Co. Cork, Ireland, including light and black forms, with examples from the Scilly Isles, Isle of Man, and North of Scotland, for comparison. Mr. Elwes exhibited a series of *Chionobas alberta* (male and female), *C. uhleri* var. *varuna*, and *Erebia discoidalis*, from Calgary, Alberta, N.W. Canada, collected in May last by Mr. Woolley-Dod. He said that the validity of *C. alberta*, which had been questioned by Mr. W. H. Edwards, was fully established by these specimens. Prof. Poulton gave an account of the changes he had recently made at Oxford in the arrangement of the Hope Collections in the Department of Zoology, and as to the rooms now available for students working at these collections. Mr. G. T. Bethune-Baker communicated a paper entitled "Descriptions of the Pyralidæ, Crambidæ, and Phycidæ collected by the late T. Vernon Wollaston in Madeira."

November 7th.—Colonel Charles Swinhoe, M.A., F.L.S., Vice-President, in the chair. Mr. W. P. Blackburne-Maze, of Shaw House, Newbury, Berkshire, and Mr. Bertram George Rye, of 212, Upper Richmond Road, Putney, S.W., were elected Fellows of the Society. Colonel Swinhoe exhibited a female of *Papilio telearchus*, Hewitson, which he had received by the last mail from Cherra Punji. He said that this was the only known specimen of the female of this species, with the exception of one in Mr. L. de Nicéville's collection, which he had described in the 'Journal of the Bombay Natural History Society' in 1893. He also exhibited a male of the same species for comparison. Mr. C. G. Barrett exhibited abnormal forms of *Pararge megera*, *P. ageria*, *Melitæa athalia*, *Chrysophanus phleas*, *Charaas graminis*, *Lophopteryx camelina*, *Plusia gamma*, *Oucullia chamomilla*, *Boarmia repandata* var. *conversaria*, *Cidaria psittacata*, and other species, all collected by Major J. N. Still, on Dartmoor, Devon. He also exhibited, for Mr. Sydney Webb, of Dover, a long series of most remarkable varieties of *Arctia caja* and *A. villica*. Mr. Gervase F.

Mathew exhibited seven beautiful and striking varieties of *Arctia villica*, bred from larvæ obtained on the Essex coast, near Dovercourt, in March and April, 1893 and 1894. Herr Jacoby exhibited two specimens of *Blaps mucronatus*, with soft elytra, taken on a wall at Hampstead. The Rev. Canon Fowler and Mr. G. C. Champion made some remarks on the subject of the elytra of immature beetles. Mr. H. Goss exhibited a specimen of *Periplaneta australasiae*, received from Mr. C. E. Morris, of Preston, near Brighton. Mr. McLachlan said the species had been introduced into this country, but was now considered a British insect. Mr. B. G. Rye exhibited specimens of the following rare or local species of Coleoptera, and gave the names of the localities in which they had been taken:—*Cicindela germanica*, *Eumicrus rufus*, *Triarthron markeli*, *Mezium affine*, *Homaloptia ruricola*, *Anomala frischei* var. *julii*, *Synaptus filiformis*, *Lixus paraplecticus*, *Balaninus cerasorum*, *Asemum striatum*, and *Zeugophora flavicollis*. Mr. McLachlan exhibited, for Mr. G. C. Bignell, of Plymouth, two new species of Ichneumonidæ, from Devonshire, viz., *Pimpla bridgmani*, Bign., a parasite on a spider, *Drassus lapidicolens*, Walek.; and *Praon absinthii*, Bign., a parasite on *Siphonophora absinthii*, Linné. Mr. C. O. Waterhouse stated that the *Acridium* received from Capt. Montgomery, and exhibited by Mr. Goss at the last meeting, was *Acridium septemfasciatum*, and he exhibited the species with the wings extended. Mr. Ridley exhibited a species of a scale insect (? *Lecanium*), found on a nutmeg tree in Malacca, and made some remarks on *Formica smaragdina*, which makes its nest on the trees, joining the leaves together by a thin thread of silk at the ends. The first step in making the nest is for several ants to bend the leaves together and hold on with their hind legs, and one of their number after some time runs up with a larva, and, irritating it with its antennæ, makes it produce a thread, with which the leaves are joined; when one larva is exhausted a second is fetched, and the process is repeated. Mr. Waterhouse read a paper entitled "Some Remarks on the Antennæ of Insects." A discussion followed, in which Messrs. Champion, Jacoby, McLachlan, and Gahan took part.—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—October 25th, 1894.—E. Step, Esq., President, in the chair. Mr. Hy. Lamb, of Maidstone, and Mr. Arth. Cosway, of Watford, were elected members. Mr. Jobson exhibited a var. of *Abraxas grossulariata*, L., from his garden, having only a few black scales in place of the usual markings. Mr. McArthur, bred series of *Hypsipetes sordidata*, Fb., from N. Devon; the lighter specimens from bilberry-fed larvæ, and the darker ones from fallow-fed larvæ. Mr. Frohawk, xanthic examples of *Epinephle hyperanthes*, L., and *E. ianira*, L. A long discussion ensued as to the causes of this class of variation, and the effect upon the imago of injuries to the larva and pupa, with the bearing of Weismann's theory thereon. Mr. Tutt, perfectly white vars. of *Emydia cribrum*, L., from the Alps, with New Forest examples for comparison; also two specimens of the new British species *Cataplectica farreni*, Wals., from Cambs. Mr. Mansbridge, the dry carcase of a mole taken from a barn door, which was covered with lepidopterous cocoons and pupa-cases. Mr. H. Moore, two specimens of the violet carpenter-bee, *Xylocopa violacea*,



from Podensac, Gironde. Mr. R. Adkin, bred series of *Asphalia ridens*, Fb., from the New Forest; and specimens of *Lycæna ægon*, Schiff., from Oxshot, having the two costal spots on the under side of the lower wing united. Mr. T. W. Hall, a species of *Julicidæ* found at Stevens' sale-rooms. Mr. Tutt read a paper, entitled "*Zygæna carniolica*, Scop., and its varieties," in which he gave a graphic description of the scenery at the foot of Mt. Blanc, and the delight afforded to an entomologist by the beauty and abundance of the Lepidoptera to be obtained there.

November 8th.—The President in the chair. Mr. R. South exhibited a short series of species of Lepidoptera, representing his captures during the time he had been at Macclesfield, and stated that it was the most barren year he had ever experienced. Mr. Frohawk, bred specimens of *Vanessa atalanta*, L., with an incipient white blotch in the red band on the primaries, and a pale *Thecla rubi*, L. Mr. H. Moore, a series of *Chrysophanus phlæas*. Mr. Edwards, specimens of many good species—*Plusia moneta*, Fab., *Phibalapteryx lapidata*, Hb., *Noctua depuncta*, L., *Acidalia immorata*, L., *Dasyampa rubiginea*, Fb., being among them. Mr. R. Adkin, bred series of *Dicranura bifida*, Hb., from Bucks, and of *D. furcula*, L., from Hants, and in remarking upon the similarity of the two species pointed out their distinguishing features. Mr. Fremlin, nice varied series of *Emydia cribrum*, L., from the New Forest, and a series of *Dasyampa rubiginea*, Fb., from Berks. Mr. C. A. Briggs, very fine varieties of *Lycæna bellargus*, Rott., from Kent; among them were (1) an under side with the black spots much elongated, (2) an under side with most of the black spots absent, and (3) an under side with a considerable increase in size of all the white and lighter markings. Mr. Fenn, a Shetland form of *Cidaria immanata*, Haw.; and Scotch forms of *Hepialus humuli*, L., *Emmelesia albulata*, Schiff., *Pygæra pygæra*, Hufn., *Hypsipetes ruberata*, Frr., and *Phibalapteryx lapidata*, Hb. Mr. Trenerry, a light var. of *Chrysophanus phlæas*, L., from North Cornwall. Mr. Manger, a very large *Vanessa cardui*, L., the unusually fine band containing a white spot. Mr. Perks, a specimen of *Blatta germanica*, L. Mr. Carrington, a number of large galls on a species of golden-rod, and a large water-bug, all from British North America. He also gave an interesting account of his recent visit to Manitoba, more especially referring to the flora, its similarity to the European flora, and its autumnal magnificence. Mr. Tutt read a descriptive account of his observations of *Zygæna achilleæ*, Esp., in the Alps, illustrating his remarks by a large number of specimens taken this year.—HY. J. TURNER, *Hon. Report. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—October 15th, 1894.—Mr. G. T. Bethune-Baker, V.-P., in the chair. Exhibits:—Mr. Wainwright, a small collection of Hymenoptera, made chiefly during the present year. Mr. R. C. Bradley, a small collection of Aculeates, made in the New Forest last July, which had been named for him by Mr. Saunders; it contained, among other species, *Pompilus spissus* and *Myrmosa melanocephala*. Mr. W. Harrison, insects, including *Lycæna adonis* and *L. astrarche*, taken in September last on Rodborough Hill near Stroud; also *Trochilium apiformis*, which he had succeeded in breeding from larvæ obtained at Arley in April last. He had on several occasions obtained larvæ in the autumn before hibernation, and failed to breed



a specimen, but he had found these April larvæ much easier to rear. Mr. A. H. Martineau, a few insects taken at Nevin, North Wales, in September last. There were three specimens of *Syrphus annulipes*, Zett., the species which was introduced to the British list by Mr. Wainwright, on the strength of one specimen taken by himself on the Cotswolds near Stroud, in June last. There were also specimens of *Arctophila mussitans*, and Mr. Martineau remarked upon the extraordinary resemblance of this species, particularly when on the wing, to *Bombus muscorum*; he had had the greatest difficulty to distinguish them. Mr. Bethune-Baker remarked upon the unusual numbers of Syrphidæ he had seen in his garden this autumn. Mr. Wainwright said that he had also been struck by the great numbers flying in his garden, *Syrphus balteatus* and *S. corollæ* being particularly abundant. Mr. Bradley had had similar experiences, and said that in Sutton Park *Catabomba (Syrphus) selenitica*, which he had never seen in the district before, had been quite common this autumn. Mr. A. W. Walker showed insects collected this summer in Devonshire, at Mort Hoe and Woolacombe, including *Epeolus rufipes*.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November 12th. Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. W. Hewett (Vice-President of the York and District Field Naturalists' Society), read a paper on "*Arctia lubricipeda* and its varieties *radiata*, *fasciata*, and *eboraci*, &c., in Yorkshire, Durham, and Lincolnshire," in which he spoke of the older specimens of *radiata* previous to 1891, and, after giving a complete history of the present brood, stated that he believed this form to be genuine, and congratulated Mr. Harrison on his success. The paper was illustrated by a large number of varieties of the various forms, besides a number of specimens, the result of crossing; Mr. Robson, of Hartlepool, exhibiting also a number of exotic species of the genus; Mr. Capper, Mr. Crabtree, Mr. C. F. Johnson, and others exhibiting fine series of the species; Mr. G. J. Porritt's intermediate forms being much admired. Mr. Crabtree exhibited a number of Scotch Lepidoptera, including *Sesia scoliiformis*, *Zygena exulans*, *Crambus myellus*, &c.; Mr. Gregson, specimens of *Acidalia humiliata*, with continental specimens of *A. osseata* for comparison. Mr. Watson exhibited *Parnassius delius* and *P. smintheus*, with microscopic preparations of their palpi and antennæ, and stated that, after careful examination, he had come to the conclusion that these so-called varieties were distinct species. Mr. Hewett exhibited a box of varieties of *Polia chi*, including var. *olivacea*; also two olive-brown specimens of *Bombyx quercus*, male and female, from Rhombolds Moor, Yorks. Mr. Newstead, a collection of Hemiptera-Heteroptera and Homoptera, including three cases of life-histories, prepared by his brother, Martin A. Newstead, a boy of fourteen, for which he had received the Kingsley prize. Mr. Arkle, of Chester, a fine variety of *Chelonia plantaginis*, bred from larvæ taken at Winchester, and a female *Erebia blandina*, from Witherslack, with five ocelli on each primary.—F. N. PIERCE, *Hon. Sec.*

NONPAREIL [HAGGERSTON] ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Sept. 20th, 1894. T. Jackson, Esq., President, in the chair.

Mr. Gurney exhibited fine specimens of *Cidaria truncata*, *Calymnia trapezina*, *Zonosoma annulata*, and *Crambus pascuellus*, from Chattenden. Mr. Cooper, living larvæ of *Smerinthus populi*, showing red dorsal spots. Mr. Lester, preserved larvæ of *Papilio machaon*, *Dicranura vinula*, *Notodonta dictæa* and *dictæoides*, *Ptilodontis palpina*, *Amphipyra pyramidea*, *Hadena pisi*, and *Anarta myrtilli*. Mr. Samson, specimens of *Catocala sponsa*, taken at sugar this year at Brockenhurst. A series of parasites and Diatomaceæ were inspected under the microscope.

October 4th.—The President in the chair. Mr. W. Harper exhibited an exceptionally light example of *Sphinx ligustri*; a unique form of *Polyommatus phleas*, showing four orange spots on fore wings and two orange spots on hind wings; well-defined specimens of *Spilosoma mendica*, showing confluent spots; well-shotted females of *Lycæna bellargus*, and *L. astrarche* var. *artaxerxes*. Mr. Gurney, specimens of *Xanthia flavago*, *Miselia oxyacanthæ*, *Dianthæcia irregularis*. Mr. Norman, *Sphinx ligustri*, *Catocala nupta*, *Spilosoma fuliginosa*; also living larvæ of *Odonestis potatoria*. Mr. Samson, fine series of *Triphæna fimbria*, showing variations; also *Himera pennaria*, *Hybernia defoliaria* and *leucophæaria*, and *Phigalia pedaria*. Mr. Lusby, *Arctia villica*, *Smerinthus ocellatus* and *populi*, and *Sphinx ligustri*.—F. J. WEST, *Hon. Sec.*

THE ENTOMOLOGICAL CLUB.—Meetings of this Club were held during 1894 as follows:—January 17th, at the Holborn Restaurant, Mr. G. H. Verrall in the chair. June 20th, at the residence of Mr. Philip Mason, Trent House, Burton-on-Trent. November 6th, at the residence of Mr. Robert Adkin, Wellfield, Lingards Road, Lewisham.—RICHARD SOUTH, *Hon. Sec.*

## OBITUARY.

MANY of our readers will hear with regret of the death of Mr. John Richard Wellman, which occurred at his residence at Clapham, on the morning of November 12th, 1894, in the sixty-second year of his age. A man of kindly and generous disposition, he made many friends, and was always ready to extend a helping hand to a beginner in the study of the Lepidoptera, to which order his attention was almost exclusively confined. For many years he was an occasional contributor to the pages of this journal, his communications consisting chiefly of short notes of captures, &c., among which were included several of *Boletobia fuliginaria* in the City of London. He was the first President of the South London Entomological Society, and occupied that position from 1872 to 1874 and again in 1883, and was elected an honorary member in 1892. During his later years he suffered acutely from the distressing disease which ultimately caused his death, and for some time previously rendered him incapable of taking the slightest exertion, and prevented him from giving attention to his extensive collection of Lepidoptera, the formation of which had given him so much pleasure in his happier days. He was interred at Norwood Cemetery.—R. A.







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